

**Annex 3F. Nitrous Oxide from Soil Management (IPCC 3C4 & 3C5)  
to the Technical Support Document for California's 2000-2014 Greenhouse Gas  
Emission Inventory**

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**Variables Used in the Emissions Estimation Equations**

Values last updated on Wednesday, March 30, 2016

**IPCC category = 3C4 — Aggregate Sources and Non-CO2 Emissions Sources on Land - Direct N2O Emissions from Managed Soils**

**Activity = Commercial use of nitrogen fertilizer on turf - Synthetic fertilizers**

| - Variable Name -   | - Year - | - Value and Units - | - Reference -         |
|---|----------|---------------------|-----------------------|
| Commercial use of nitrogen fertilizer on turf - Synthetic fertilizers | 2000     | 88,910 ton          | Compilation, see text |
| Commercial use of nitrogen fertilizer on turf - Synthetic fertilizers | 2001     | 90,249 ton          | Compilation, see text |
| Commercial use of nitrogen fertilizer on turf - Synthetic fertilizers | 2002     | 91,362 ton          | Compilation, see text |
| Commercial use of nitrogen fertilizer on turf - Synthetic fertilizers | 2003     | 92,540 ton          | Compilation, see text |
| Commercial use of nitrogen fertilizer on turf - Synthetic fertilizers | 2004     | 93,491 ton          | Compilation, see text |
| Commercial use of nitrogen fertilizer on turf - Synthetic fertilizers | 2005     | 94,100 ton          | Compilation, see text |
| Commercial use of nitrogen fertilizer on turf - Synthetic fertilizers | 2006     | 94,783 ton          | Compilation, see text |
| Commercial use of nitrogen fertilizer on turf - Synthetic fertilizers | 2007     | 95,583 ton          | Compilation, see text |
| Commercial use of nitrogen fertilizer on turf - Synthetic fertilizers | 2008     | 96,377 ton          | Compilation, see text |
| Commercial use of nitrogen fertilizer on turf - Synthetic fertilizers | 2009     | 96,955 ton          | Compilation, see text |
| Commercial use of nitrogen fertilizer on turf - Synthetic fertilizers | 2010     | 97,632 ton          | Compilation, see text |
| Commercial use of nitrogen fertilizer on turf - Synthetic fertilizers | 2011     | 98,588 ton          | Compilation, see text |
| Commercial use of nitrogen fertilizer on turf - Synthetic fertilizers | 2012     | 99,532 ton          | Compilation, see text |
| Commercial use of nitrogen fertilizer on turf - Synthetic fertilizers | 2013     | 100,496 ton         | Compilation, see text |
| Commercial use of nitrogen fertilizer on turf - Synthetic fertilizers | 2014     | 101,466 ton         | Compilation, see text |
| Nitrogen emitted as N2O   | 2000     | 0.01 g / g          | IPCC, 2006e           |
| Nitrogen emitted as N2O   | 2001     | 0.01 g / g          | IPCC, 2006e           |
| Nitrogen emitted as N2O   | 2002     | 0.01 g / g          | IPCC, 2006e           |
| Nitrogen emitted as N2O   | 2003     | 0.01 g / g          | IPCC, 2006e           |
| Nitrogen emitted as N2O   | 2004     | 0.01 g / g          | IPCC, 2006e           |
| Nitrogen emitted as N2O   | 2005     | 0.01 g / g          | IPCC, 2006e           |
| Nitrogen emitted as N2O   | 2006     | 0.01 g / g          | IPCC, 2006e           |
| Nitrogen emitted as N2O   | 2007     | 0.01 g / g          | IPCC, 2006e           |
| Nitrogen emitted as N2O   | 2008     | 0.01 g / g          | IPCC, 2006e           |
| Nitrogen emitted as N2O   | 2009     | 0.01 g / g          | IPCC, 2006e           |
| Nitrogen emitted as N2O   | 2010     | 0.01 g / g          | IPCC, 2006e           |
| Nitrogen emitted as N2O   | 2011     | 0.01 g / g          | IPCC, 2006e           |
| Nitrogen emitted as N2O   | 2012     | 0.01 g / g          | IPCC, 2006e           |
| Nitrogen emitted as N2O   | 2013     | 0.01 g / g          | IPCC, 2006e           |
| Nitrogen emitted as N2O   | 2014     | 0.01 g / g          | IPCC, 2006e           |

**Activity = Drained histosols**

| - Variable Name - | - Year - | - Value and Units - | - Reference -         |
|-------------------|----------|---------------------|-----------------------|
| Drained histosols | 2000     | 39,800 ha           | Compilation, see text |
| Drained histosols | 2001     | 39,800 ha           | Compilation, see text |

|                   |      |           |                       |
|-------------------|------|-----------|-----------------------|
| Drained histosols | 2002 | 39,800 ha | Compilation, see text |
| Drained histosols | 2003 | 39,800 ha | Compilation, see text |
| Drained histosols | 2004 | 39,800 ha | Compilation, see text |
| Drained histosols | 2005 | 39,800 ha | Compilation, see text |
| Drained histosols | 2006 | 39,800 ha | Compilation, see text |
| Drained histosols | 2007 | 39,800 ha | Compilation, see text |
| Drained histosols | 2008 | 39,800 ha | Compilation, see text |
| Drained histosols | 2009 | 39,800 ha | Compilation, see text |
| Drained histosols | 2010 | 39,800 ha | Compilation, see text |
| Drained histosols | 2011 | 39,800 ha | Compilation, see text |
| Drained histosols | 2012 | 39,800 ha | Compilation, see text |
| Drained histosols | 2013 | 39,800 ha | Compilation, see text |
| Drained histosols | 2014 | 39,800 ha | Compilation, see text |

|                                      |      |              |             |
|--------------------------------------|------|--------------|-------------|
| Nitrogen emitted as N <sub>2</sub> O | 2000 | 8,000 g / ha | IPCC, 2006e |
| Nitrogen emitted as N <sub>2</sub> O | 2001 | 8,000 g / ha | IPCC, 2006e |
| Nitrogen emitted as N <sub>2</sub> O | 2002 | 8,000 g / ha | IPCC, 2006e |
| Nitrogen emitted as N <sub>2</sub> O | 2003 | 8,000 g / ha | IPCC, 2006e |
| Nitrogen emitted as N <sub>2</sub> O | 2004 | 8,000 g / ha | IPCC, 2006e |
| Nitrogen emitted as N <sub>2</sub> O | 2005 | 8,000 g / ha | IPCC, 2006e |
| Nitrogen emitted as N <sub>2</sub> O | 2006 | 8,000 g / ha | IPCC, 2006e |
| Nitrogen emitted as N <sub>2</sub> O | 2007 | 8,000 g / ha | IPCC, 2006e |
| Nitrogen emitted as N <sub>2</sub> O | 2008 | 8,000 g / ha | IPCC, 2006e |
| Nitrogen emitted as N <sub>2</sub> O | 2009 | 8,000 g / ha | IPCC, 2006e |
| Nitrogen emitted as N <sub>2</sub> O | 2010 | 8,000 g / ha | IPCC, 2006e |
| Nitrogen emitted as N <sub>2</sub> O | 2011 | 8,000 g / ha | IPCC, 2006e |
| Nitrogen emitted as N <sub>2</sub> O | 2012 | 8,000 g / ha | IPCC, 2006e |
| Nitrogen emitted as N <sub>2</sub> O | 2013 | 8,000 g / ha | IPCC, 2006e |
| Nitrogen emitted as N <sub>2</sub> O | 2014 | 8,000 g / ha | IPCC, 2006e |

**Activity = Nitrogen applied in fertilizer - Organic fertilizers**

| - Variable Name -                                    | - Year - | - Value and Units - | - Reference -        |
|--|----------|---------------------|----------------------|
| Nitrogen applied in fertilizer - Organic fertilizers | 2000     | 9,864 ton           | CDFA, various years  |
| Nitrogen applied in fertilizer - Organic fertilizers | 2001     | 3,029 ton           | CDFA, various years  |
| Nitrogen applied in fertilizer - Organic fertilizers | 2002     | 4,760 ton           | CDFA, various years  |
| Nitrogen applied in fertilizer - Organic fertilizers | 2003     | 6,350 ton           | CDFA, various years  |
| Nitrogen applied in fertilizer - Organic fertilizers | 2004     | 2,417 ton           | CDFA, various years  |
| Nitrogen applied in fertilizer - Organic fertilizers | 2005     | 3,559 ton           | CDFA, various years  |
| Nitrogen applied in fertilizer - Organic fertilizers | 2006     | 2,289 ton           | CDFA, various years  |
| Nitrogen applied in fertilizer - Organic fertilizers | 2007     | 895 ton             | CDFA, various years  |
| Nitrogen applied in fertilizer - Organic fertilizers | 2008     | 3,248 ton           | CDFA, various years  |
| Nitrogen applied in fertilizer - Organic fertilizers | 2009     | 6,658 ton           | CDFA, various years  |
| Nitrogen applied in fertilizer - Organic fertilizers | 2010     | 67 ton              | CDFA, various years  |
| Nitrogen applied in fertilizer - Organic fertilizers | 2011     | 185 ton             | CDFA, various years  |
| Nitrogen applied in fertilizer - Organic fertilizers | 2012     | 5,184 ton           | CDFA, various years  |
| Nitrogen applied in fertilizer - Organic fertilizers | 2013     | 5,184 ton           | Assume equal to 2012 |
| Nitrogen applied in fertilizer - Organic fertilizers | 2014     | 5,184 ton           | Assume equal to 2012 |
| Nitrogen emitted as N <sub>2</sub> O                 | 2000     | 0.01 g / g          | IPCC, 2006e          |
| Nitrogen emitted as N <sub>2</sub> O                 | 2001     | 0.01 g / g          | IPCC, 2006e          |
| Nitrogen emitted as N <sub>2</sub> O                 | 2002     | 0.01 g / g          | IPCC, 2006e          |
| Nitrogen emitted as N <sub>2</sub> O                 | 2003     | 0.01 g / g          | IPCC, 2006e          |
| Nitrogen emitted as N <sub>2</sub> O                 | 2004     | 0.01 g / g          | IPCC, 2006e          |
| Nitrogen emitted as N <sub>2</sub> O                 | 2005     | 0.01 g / g          | IPCC, 2006e          |
| Nitrogen emitted as N <sub>2</sub> O                 | 2006     | 0.01 g / g          | IPCC, 2006e          |
| Nitrogen emitted as N <sub>2</sub> O                 | 2007     | 0.01 g / g          | IPCC, 2006e          |
| Nitrogen emitted as N <sub>2</sub> O                 | 2008     | 0.01 g / g          | IPCC, 2006e          |
| Nitrogen emitted as N <sub>2</sub> O                 | 2009     | 0.01 g / g          | IPCC, 2006e          |

|                         |      |            |             |
|-------------------------|------|------------|-------------|
| Nitrogen emitted as N2O | 2010 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O | 2011 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O | 2012 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O | 2013 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O | 2014 | 0.01 g / g | IPCC, 2006e |

**Activity = Nitrogen applied in fertilizer - Synthetic fertilizers**

| - Variable Name -                                      | - Year - | - Value and Units - | - Reference -         |
|--|----------|---------------------|-----------------------|
| Nitrogen applied in fertilizer - Synthetic fertilizers | 2000     | 550,485 ton         | Compilation, see text |
| Nitrogen applied in fertilizer - Synthetic fertilizers | 2001     | 542,705 ton         | Compilation, see text |
| Nitrogen applied in fertilizer - Synthetic fertilizers | 2002     | 550,216 ton         | Compilation, see text |
| Nitrogen applied in fertilizer - Synthetic fertilizers | 2003     | 537,947 ton         | Compilation, see text |
| Nitrogen applied in fertilizer - Synthetic fertilizers | 2004     | 542,299 ton         | Compilation, see text |
| Nitrogen applied in fertilizer - Synthetic fertilizers | 2005     | 532,743 ton         | Compilation, see text |
| Nitrogen applied in fertilizer - Synthetic fertilizers | 2006     | 520,087 ton         | Compilation, see text |
| Nitrogen applied in fertilizer - Synthetic fertilizers | 2007     | 536,113 ton         | Compilation, see text |
| Nitrogen applied in fertilizer - Synthetic fertilizers | 2008     | 538,479 ton         | Compilation, see text |
| Nitrogen applied in fertilizer - Synthetic fertilizers | 2009     | 513,379 ton         | Compilation, see text |
| Nitrogen applied in fertilizer - Synthetic fertilizers | 2010     | 538,345 ton         | Compilation, see text |
| Nitrogen applied in fertilizer - Synthetic fertilizers | 2011     | 569,673 ton         | Compilation, see text |
| Nitrogen applied in fertilizer - Synthetic fertilizers | 2012     | 563,750 ton         | Compilation, see text |
| Nitrogen applied in fertilizer - Synthetic fertilizers | 2013     | 539,403 ton         | Compilation, see text |
| Nitrogen applied in fertilizer - Synthetic fertilizers | 2014     | 501,644 ton         | Compilation, see text |
| Nitrogen emitted as N2O                                | 2000     | 0.01 g / g          | IPCC, 2006e           |
| Nitrogen emitted as N2O                                | 2001     | 0.01 g / g          | IPCC, 2006e           |
| Nitrogen emitted as N2O                                | 2002     | 0.01 g / g          | IPCC, 2006e           |
| Nitrogen emitted as N2O                                | 2003     | 0.01 g / g          | IPCC, 2006e           |
| Nitrogen emitted as N2O                                | 2004     | 0.01 g / g          | IPCC, 2006e           |
| Nitrogen emitted as N2O                                | 2005     | 0.01 g / g          | IPCC, 2006e           |
| Nitrogen emitted as N2O                                | 2006     | 0.01 g / g          | IPCC, 2006e           |
| Nitrogen emitted as N2O                                | 2007     | 0.01 g / g          | IPCC, 2006e           |
| Nitrogen emitted as N2O                                | 2008     | 0.01 g / g          | IPCC, 2006e           |
| Nitrogen emitted as N2O                                | 2009     | 0.01 g / g          | IPCC, 2006e           |
| Nitrogen emitted as N2O                                | 2010     | 0.01 g / g          | IPCC, 2006e           |
| Nitrogen emitted as N2O                                | 2011     | 0.01 g / g          | IPCC, 2006e           |
| Nitrogen emitted as N2O                                | 2012     | 0.01 g / g          | IPCC, 2006e           |
| Nitrogen emitted as N2O                                | 2013     | 0.01 g / g          | IPCC, 2006e           |
| Nitrogen emitted as N2O                                | 2014     | 0.01 g / g          | IPCC, 2006e           |

**Activity = Nitrogen in crop residues**

| - Variable Name -         | - Year - | - Value and Units -        | - Reference -         |
|---------------------------|----------|----------------------------|-----------------------|
| Nitrogen in crop residues | 2000     | 75.76 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in crop residues | 2001     | 76.16 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in crop residues | 2002     | 82.37 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in crop residues | 2003     | 80.61 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in crop residues | 2004     | 96.28 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in crop residues | 2005     | 77.19 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in crop residues | 2006     | 75.53 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in crop residues | 2007     | 82.04 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in crop residues | 2008     | 90.83 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in crop residues | 2009     | 85 Gg (thousand tonnes)    | Compilation, see text |
| Nitrogen in crop residues | 2010     | 83.3 Gg (thousand tonnes)  | Compilation, see text |
| Nitrogen in crop residues | 2011     | 85.94 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in crop residues | 2012     | 85.34 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in crop residues | 2013     | 80.08 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in crop residues | 2014     | 64.27 Gg (thousand tonnes) | Compilation, see text |

|                         |      |            |             |
|-------------------------|------|------------|-------------|
| Nitrogen emitted as N2O | 2000 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O | 2001 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O | 2002 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O | 2003 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O | 2004 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O | 2005 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O | 2006 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O | 2007 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O | 2008 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O | 2009 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O | 2010 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O | 2011 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O | 2012 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O | 2013 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O | 2014 | 0.01 g / g | IPCC, 2006e |

**Activity = Nitrogen in managed manure - Beef cattle**

| - Variable Name -                        | - Year - | - Value and Units -        | - Reference -         |
|--|----------|----------------------------|-----------------------|
| Nitrogen in managed manure - Beef cattle | 2000     | 14.83 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in managed manure - Beef cattle | 2001     | 15.04 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in managed manure - Beef cattle | 2002     | 16.78 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in managed manure - Beef cattle | 2003     | 18.48 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in managed manure - Beef cattle | 2004     | 17.46 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in managed manure - Beef cattle | 2005     | 18.35 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in managed manure - Beef cattle | 2006     | 19.75 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in managed manure - Beef cattle | 2007     | 19.33 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in managed manure - Beef cattle | 2008     | 19.02 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in managed manure - Beef cattle | 2009     | 17.96 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in managed manure - Beef cattle | 2010     | 17.34 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in managed manure - Beef cattle | 2011     | 17.36 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in managed manure - Beef cattle | 2012     | 18.13 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in managed manure - Beef cattle | 2013     | 18.18 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in managed manure - Beef cattle | 2014     | 20.03 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen emitted as N2O                  | 2000     | 0.01 g / g                 | IPCC, 2006e           |
| Nitrogen emitted as N2O                  | 2001     | 0.01 g / g                 | IPCC, 2006e           |
| Nitrogen emitted as N2O                  | 2002     | 0.01 g / g                 | IPCC, 2006e           |
| Nitrogen emitted as N2O                  | 2003     | 0.01 g / g                 | IPCC, 2006e           |
| Nitrogen emitted as N2O                  | 2004     | 0.01 g / g                 | IPCC, 2006e           |
| Nitrogen emitted as N2O                  | 2005     | 0.01 g / g                 | IPCC, 2006e           |
| Nitrogen emitted as N2O                  | 2006     | 0.01 g / g                 | IPCC, 2006e           |
| Nitrogen emitted as N2O                  | 2007     | 0.01 g / g                 | IPCC, 2006e           |
| Nitrogen emitted as N2O                  | 2008     | 0.01 g / g                 | IPCC, 2006e           |
| Nitrogen emitted as N2O                  | 2009     | 0.01 g / g                 | IPCC, 2006e           |
| Nitrogen emitted as N2O                  | 2010     | 0.01 g / g                 | IPCC, 2006e           |
| Nitrogen emitted as N2O                  | 2011     | 0.01 g / g                 | IPCC, 2006e           |
| Nitrogen emitted as N2O                  | 2012     | 0.01 g / g                 | IPCC, 2006e           |
| Nitrogen emitted as N2O                  | 2013     | 0.01 g / g                 | IPCC, 2006e           |
| Nitrogen emitted as N2O                  | 2014     | 0.01 g / g                 | IPCC, 2006e           |

**Activity = Nitrogen in managed manure - Dairy cows**

| - Variable Name -                       | - Year - | - Value and Units -         | - Reference -         |
|---|----------|-----------------------------|-----------------------|
| Nitrogen in managed manure - Dairy cows | 2000     | 135.31 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in managed manure - Dairy cows | 2001     | 136.75 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in managed manure - Dairy cows | 2002     | 147.96 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in managed manure - Dairy cows | 2003     | 150.83 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in managed manure - Dairy cows | 2004     | 146.38 Gg (thousand tonnes) | Compilation, see text |

|   |      |                             |                       |
|---|------|-----------------------------|-----------------------|
| Nitrogen in managed manure - Dairy cows | 2005 | 149.98 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in managed manure - Dairy cows | 2006 | 154.01 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in managed manure - Dairy cows | 2007 | 160.98 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in managed manure - Dairy cows | 2008 | 156.13 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in managed manure - Dairy cows | 2009 | 152.33 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in managed manure - Dairy cows | 2010 | 156.48 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in managed manure - Dairy cows | 2011 | 155.95 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in managed manure - Dairy cows | 2012 | 156.61 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in managed manure - Dairy cows | 2013 | 151.79 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in managed manure - Dairy cows | 2014 | 155.03 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen emitted as N <sub>2</sub> O    | 2000 | 0.01 g / g                  | IPCC, 2006e           |
| Nitrogen emitted as N <sub>2</sub> O    | 2001 | 0.01 g / g                  | IPCC, 2006e           |
| Nitrogen emitted as N <sub>2</sub> O    | 2002 | 0.01 g / g                  | IPCC, 2006e           |
| Nitrogen emitted as N <sub>2</sub> O    | 2003 | 0.01 g / g                  | IPCC, 2006e           |
| Nitrogen emitted as N <sub>2</sub> O    | 2004 | 0.01 g / g                  | IPCC, 2006e           |
| Nitrogen emitted as N <sub>2</sub> O    | 2005 | 0.01 g / g                  | IPCC, 2006e           |
| Nitrogen emitted as N <sub>2</sub> O    | 2006 | 0.01 g / g                  | IPCC, 2006e           |
| Nitrogen emitted as N <sub>2</sub> O    | 2007 | 0.01 g / g                  | IPCC, 2006e           |
| Nitrogen emitted as N <sub>2</sub> O    | 2008 | 0.01 g / g                  | IPCC, 2006e           |
| Nitrogen emitted as N <sub>2</sub> O    | 2009 | 0.01 g / g                  | IPCC, 2006e           |
| Nitrogen emitted as N <sub>2</sub> O    | 2010 | 0.01 g / g                  | IPCC, 2006e           |
| Nitrogen emitted as N <sub>2</sub> O    | 2011 | 0.01 g / g                  | IPCC, 2006e           |
| Nitrogen emitted as N <sub>2</sub> O    | 2012 | 0.01 g / g                  | IPCC, 2006e           |
| Nitrogen emitted as N <sub>2</sub> O    | 2013 | 0.01 g / g                  | IPCC, 2006e           |
| Nitrogen emitted as N <sub>2</sub> O    | 2014 | 0.01 g / g                  | IPCC, 2006e           |

**Activity = Nitrogen in managed manure - Dairy heifers**

| - Variable Name -                          | - Year - | - Value and Units -        | - Reference -         |
|--|----------|----------------------------|-----------------------|
| Nitrogen in managed manure - Dairy heifers | 2000     | 38.66 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in managed manure - Dairy heifers | 2001     | 40.1 Gg (thousand tonnes)  | Compilation, see text |
| Nitrogen in managed manure - Dairy heifers | 2002     | 41.35 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in managed manure - Dairy heifers | 2003     | 42.06 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in managed manure - Dairy heifers | 2004     | 37.72 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in managed manure - Dairy heifers | 2005     | 39.49 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in managed manure - Dairy heifers | 2006     | 40.67 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in managed manure - Dairy heifers | 2007     | 40.38 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in managed manure - Dairy heifers | 2008     | 39.28 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in managed manure - Dairy heifers | 2009     | 38.58 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in managed manure - Dairy heifers | 2010     | 37.37 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in managed manure - Dairy heifers | 2011     | 37.41 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in managed manure - Dairy heifers | 2012     | 41.1 Gg (thousand tonnes)  | Compilation, see text |
| Nitrogen in managed manure - Dairy heifers | 2013     | 38.26 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in managed manure - Dairy heifers | 2014     | 36.9 Gg (thousand tonnes)  | Compilation, see text |
| Nitrogen emitted as N <sub>2</sub> O       | 2000     | 0.01 g / g                 | IPCC, 2006e           |
| Nitrogen emitted as N <sub>2</sub> O       | 2001     | 0.01 g / g                 | IPCC, 2006e           |
| Nitrogen emitted as N <sub>2</sub> O       | 2002     | 0.01 g / g                 | IPCC, 2006e           |
| Nitrogen emitted as N <sub>2</sub> O       | 2003     | 0.01 g / g                 | IPCC, 2006e           |
| Nitrogen emitted as N <sub>2</sub> O       | 2004     | 0.01 g / g                 | IPCC, 2006e           |
| Nitrogen emitted as N <sub>2</sub> O       | 2005     | 0.01 g / g                 | IPCC, 2006e           |
| Nitrogen emitted as N <sub>2</sub> O       | 2006     | 0.01 g / g                 | IPCC, 2006e           |
| Nitrogen emitted as N <sub>2</sub> O       | 2007     | 0.01 g / g                 | IPCC, 2006e           |
| Nitrogen emitted as N <sub>2</sub> O       | 2008     | 0.01 g / g                 | IPCC, 2006e           |
| Nitrogen emitted as N <sub>2</sub> O       | 2009     | 0.01 g / g                 | IPCC, 2006e           |
| Nitrogen emitted as N <sub>2</sub> O       | 2010     | 0.01 g / g                 | IPCC, 2006e           |
| Nitrogen emitted as N <sub>2</sub> O       | 2011     | 0.01 g / g                 | IPCC, 2006e           |
| Nitrogen emitted as N <sub>2</sub> O       | 2012     | 0.01 g / g                 | IPCC, 2006e           |



|                                      |      |            |             |
|--------------------------------------|------|------------|-------------|
| Nitrogen emitted as N <sub>2</sub> O | 2013 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N <sub>2</sub> O | 2014 | 0.01 g / g | IPCC, 2006e |

**Activity = Nitrogen in managed manure - Poultry**

| - Variable Name -                    | - Year - | - Value and Units -        | - Reference -         |
|--------------------------------------|----------|----------------------------|-----------------------|
| Nitrogen in managed manure - Poultry | 2000     | 21.2 Gg (thousand tonnes)  | Compilation, see text |
| Nitrogen in managed manure - Poultry | 2001     | 21.18 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in managed manure - Poultry | 2002     | 20.62 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in managed manure - Poultry | 2003     | 19.51 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in managed manure - Poultry | 2004     | 17.85 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in managed manure - Poultry | 2005     | 17.05 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in managed manure - Poultry | 2006     | 17.67 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in managed manure - Poultry | 2007     | 18.08 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in managed manure - Poultry | 2008     | 17.33 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in managed manure - Poultry | 2009     | 16.83 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in managed manure - Poultry | 2010     | 17.03 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in managed manure - Poultry | 2011     | 16.29 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in managed manure - Poultry | 2012     | 16.07 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in managed manure - Poultry | 2013     | 14.07 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in managed manure - Poultry | 2014     | 12.26 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen emitted as N <sub>2</sub> O | 2000     | 0.01 g / g                 | IPCC, 2006e           |
| Nitrogen emitted as N <sub>2</sub> O | 2001     | 0.01 g / g                 | IPCC, 2006e           |
| Nitrogen emitted as N <sub>2</sub> O | 2002     | 0.01 g / g                 | IPCC, 2006e           |
| Nitrogen emitted as N <sub>2</sub> O | 2003     | 0.01 g / g                 | IPCC, 2006e           |
| Nitrogen emitted as N <sub>2</sub> O | 2004     | 0.01 g / g                 | IPCC, 2006e           |
| Nitrogen emitted as N <sub>2</sub> O | 2005     | 0.01 g / g                 | IPCC, 2006e           |
| Nitrogen emitted as N <sub>2</sub> O | 2006     | 0.01 g / g                 | IPCC, 2006e           |
| Nitrogen emitted as N <sub>2</sub> O | 2007     | 0.01 g / g                 | IPCC, 2006e           |
| Nitrogen emitted as N <sub>2</sub> O | 2008     | 0.01 g / g                 | IPCC, 2006e           |
| Nitrogen emitted as N <sub>2</sub> O | 2009     | 0.01 g / g                 | IPCC, 2006e           |
| Nitrogen emitted as N <sub>2</sub> O | 2010     | 0.01 g / g                 | IPCC, 2006e           |
| Nitrogen emitted as N <sub>2</sub> O | 2011     | 0.01 g / g                 | IPCC, 2006e           |
| Nitrogen emitted as N <sub>2</sub> O | 2012     | 0.01 g / g                 | IPCC, 2006e           |
| Nitrogen emitted as N <sub>2</sub> O | 2013     | 0.01 g / g                 | IPCC, 2006e           |
| Nitrogen emitted as N <sub>2</sub> O | 2014     | 0.01 g / g                 | IPCC, 2006e           |

**Activity = Nitrogen in managed manure - Sheep, goat, horse**

| - Variable Name -                               | - Year - | - Value and Units -       | - Reference -         |
|---|----------|---------------------------|-----------------------|
| Nitrogen in managed manure - Sheep, goat, horse | 2000     | 3.03 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in managed manure - Sheep, goat, horse | 2001     | 3.31 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in managed manure - Sheep, goat, horse | 2002     | 3.3 Gg (thousand tonnes)  | Compilation, see text |
| Nitrogen in managed manure - Sheep, goat, horse | 2003     | 3.46 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in managed manure - Sheep, goat, horse | 2004     | 3.54 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in managed manure - Sheep, goat, horse | 2005     | 3.82 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in managed manure - Sheep, goat, horse | 2006     | 3.76 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in managed manure - Sheep, goat, horse | 2007     | 3.63 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in managed manure - Sheep, goat, horse | 2008     | 3.62 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in managed manure - Sheep, goat, horse | 2009     | 3.79 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in managed manure - Sheep, goat, horse | 2010     | 3.71 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in managed manure - Sheep, goat, horse | 2011     | 3.71 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in managed manure - Sheep, goat, horse | 2012     | 3.69 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in managed manure - Sheep, goat, horse | 2013     | 3.64 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in managed manure - Sheep, goat, horse | 2014     | 3.69 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen emitted as N <sub>2</sub> O            | 2000     | 0.01 g / g                | IPCC, 2006e           |
| Nitrogen emitted as N <sub>2</sub> O            | 2001     | 0.01 g / g                | IPCC, 2006e           |
| Nitrogen emitted as N <sub>2</sub> O            | 2002     | 0.01 g / g                | IPCC, 2006e           |

|                         |      |            |             |
|-------------------------|------|------------|-------------|
| Nitrogen emitted as N2O | 2003 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O | 2004 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O | 2005 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O | 2006 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O | 2007 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O | 2008 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O | 2009 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O | 2010 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O | 2011 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O | 2012 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O | 2013 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O | 2014 | 0.01 g / g | IPCC, 2006e |

**Activity = Nitrogen in managed manure - Swine**

| - Variable Name -                  | - Year - | - Value and Units - | - Reference -         |
|------------------------------------|----------|---------------------|-----------------------|
| Nitrogen in managed manure - Swine | 2000     | 639.2 Mg (tonnes)   | Compilation, see text |
| Nitrogen in managed manure - Swine | 2001     | 475.38 Mg (tonnes)  | Compilation, see text |
| Nitrogen in managed manure - Swine | 2002     | 683.29 Mg (tonnes)  | Compilation, see text |
| Nitrogen in managed manure - Swine | 2003     | 640.43 Mg (tonnes)  | Compilation, see text |
| Nitrogen in managed manure - Swine | 2004     | 682.36 Mg (tonnes)  | Compilation, see text |
| Nitrogen in managed manure - Swine | 2005     | 675.76 Mg (tonnes)  | Compilation, see text |
| Nitrogen in managed manure - Swine | 2006     | 676.32 Mg (tonnes)  | Compilation, see text |
| Nitrogen in managed manure - Swine | 2007     | 765.1 Mg (tonnes)   | Compilation, see text |
| Nitrogen in managed manure - Swine | 2008     | 386.5 Mg (tonnes)   | Compilation, see text |
| Nitrogen in managed manure - Swine | 2009     | 537.25 Mg (tonnes)  | Compilation, see text |
| Nitrogen in managed manure - Swine | 2010     | 507.69 Mg (tonnes)  | Compilation, see text |
| Nitrogen in managed manure - Swine | 2011     | 536.09 Mg (tonnes)  | Compilation, see text |
| Nitrogen in managed manure - Swine | 2012     | 527.59 Mg (tonnes)  | Compilation, see text |
| Nitrogen in managed manure - Swine | 2013     | 487.04 Mg (tonnes)  | Compilation, see text |
| Nitrogen in managed manure - Swine | 2014     | 540.51 Mg (tonnes)  | Compilation, see text |
| Nitrogen emitted as N2O            | 2000     | 0.01 g / g          | IPCC, 2006e           |
| Nitrogen emitted as N2O            | 2001     | 0.01 g / g          | IPCC, 2006e           |
| Nitrogen emitted as N2O            | 2002     | 0.01 g / g          | IPCC, 2006e           |
| Nitrogen emitted as N2O            | 2003     | 0.01 g / g          | IPCC, 2006e           |
| Nitrogen emitted as N2O            | 2004     | 0.01 g / g          | IPCC, 2006e           |
| Nitrogen emitted as N2O            | 2005     | 0.01 g / g          | IPCC, 2006e           |
| Nitrogen emitted as N2O            | 2006     | 0.01 g / g          | IPCC, 2006e           |
| Nitrogen emitted as N2O            | 2007     | 0.01 g / g          | IPCC, 2006e           |
| Nitrogen emitted as N2O            | 2008     | 0.01 g / g          | IPCC, 2006e           |
| Nitrogen emitted as N2O            | 2009     | 0.01 g / g          | IPCC, 2006e           |
| Nitrogen emitted as N2O            | 2010     | 0.01 g / g          | IPCC, 2006e           |
| Nitrogen emitted as N2O            | 2011     | 0.01 g / g          | IPCC, 2006e           |
| Nitrogen emitted as N2O            | 2012     | 0.01 g / g          | IPCC, 2006e           |
| Nitrogen emitted as N2O            | 2013     | 0.01 g / g          | IPCC, 2006e           |
| Nitrogen emitted as N2O            | 2014     | 0.01 g / g          | IPCC, 2006e           |

**Activity = Nitrogen in unmanaged manure - Beef cattle**

| - Variable Name -                          | - Year - | - Value and Units -         | - Reference -         |
|--|----------|-----------------------------|-----------------------|
| Nitrogen in unmanaged manure - Beef cattle | 2000     | 106.34 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in unmanaged manure - Beef cattle | 2001     | 105.36 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in unmanaged manure - Beef cattle | 2002     | 104.73 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in unmanaged manure - Beef cattle | 2003     | 103.51 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in unmanaged manure - Beef cattle | 2004     | 103.3 Gg (thousand tonnes)  | Compilation, see text |
| Nitrogen in unmanaged manure - Beef cattle | 2005     | 106.31 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in unmanaged manure - Beef cattle | 2006     | 102.96 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in unmanaged manure - Beef cattle | 2007     | 88.26 Gg (thousand tonnes)  | Compilation, see text |

|  |      |                            |                       |
|--|------|----------------------------|-----------------------|
| Nitrogen in unmanaged manure - Beef cattle | 2008 | 85.21 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in unmanaged manure - Beef cattle | 2009 | 85.08 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in unmanaged manure - Beef cattle | 2010 | 84.08 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in unmanaged manure - Beef cattle | 2011 | 81.65 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in unmanaged manure - Beef cattle | 2012 | 83.11 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in unmanaged manure - Beef cattle | 2013 | 81.91 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in unmanaged manure - Beef cattle | 2014 | 81.92 Gg (thousand tonnes) | Compilation, see text |

|                                      |      |            |             |
|--------------------------------------|------|------------|-------------|
| Nitrogen emitted as N <sub>2</sub> O | 2000 | 0.02 g / g | IPCC, 2006e |
| Nitrogen emitted as N <sub>2</sub> O | 2001 | 0.02 g / g | IPCC, 2006e |
| Nitrogen emitted as N <sub>2</sub> O | 2002 | 0.02 g / g | IPCC, 2006e |
| Nitrogen emitted as N <sub>2</sub> O | 2003 | 0.02 g / g | IPCC, 2006e |
| Nitrogen emitted as N <sub>2</sub> O | 2004 | 0.02 g / g | IPCC, 2006e |
| Nitrogen emitted as N <sub>2</sub> O | 2005 | 0.02 g / g | IPCC, 2006e |
| Nitrogen emitted as N <sub>2</sub> O | 2006 | 0.02 g / g | IPCC, 2006e |
| Nitrogen emitted as N <sub>2</sub> O | 2007 | 0.02 g / g | IPCC, 2006e |
| Nitrogen emitted as N <sub>2</sub> O | 2008 | 0.02 g / g | IPCC, 2006e |
| Nitrogen emitted as N <sub>2</sub> O | 2009 | 0.02 g / g | IPCC, 2006e |
| Nitrogen emitted as N <sub>2</sub> O | 2010 | 0.02 g / g | IPCC, 2006e |
| Nitrogen emitted as N <sub>2</sub> O | 2011 | 0.02 g / g | IPCC, 2006e |
| Nitrogen emitted as N <sub>2</sub> O | 2012 | 0.02 g / g | IPCC, 2006e |
| Nitrogen emitted as N <sub>2</sub> O | 2013 | 0.02 g / g | IPCC, 2006e |
| Nitrogen emitted as N <sub>2</sub> O | 2014 | 0.02 g / g | IPCC, 2006e |

**Activity = Nitrogen in unmanaged manure - Dairy cows**

| - Variable Name -                         | - Year - | - Value and Units -        | - Reference -         |
|---|----------|----------------------------|-----------------------|
| Nitrogen in unmanaged manure - Dairy cows | 2000     | 26.89 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in unmanaged manure - Dairy cows | 2001     | 26.95 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in unmanaged manure - Dairy cows | 2002     | 28.93 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in unmanaged manure - Dairy cows | 2003     | 29.22 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in unmanaged manure - Dairy cows | 2004     | 28.09 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in unmanaged manure - Dairy cows | 2005     | 28.52 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in unmanaged manure - Dairy cows | 2006     | 28.9 Gg (thousand tonnes)  | Compilation, see text |
| Nitrogen in unmanaged manure - Dairy cows | 2007     | 29.96 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in unmanaged manure - Dairy cows | 2008     | 29.05 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in unmanaged manure - Dairy cows | 2009     | 28.3 Gg (thousand tonnes)  | Compilation, see text |
| Nitrogen in unmanaged manure - Dairy cows | 2010     | 29.07 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in unmanaged manure - Dairy cows | 2011     | 28.98 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in unmanaged manure - Dairy cows | 2012     | 29.1 Gg (thousand tonnes)  | Compilation, see text |
| Nitrogen in unmanaged manure - Dairy cows | 2013     | 28.2 Gg (thousand tonnes)  | Compilation, see text |
| Nitrogen in unmanaged manure - Dairy cows | 2014     | 28.8 Gg (thousand tonnes)  | Compilation, see text |
| Nitrogen emitted as N <sub>2</sub> O      | 2000     | 0.02 g / g                 | IPCC, 2006e           |
| Nitrogen emitted as N <sub>2</sub> O      | 2001     | 0.02 g / g                 | IPCC, 2006e           |
| Nitrogen emitted as N <sub>2</sub> O      | 2002     | 0.02 g / g                 | IPCC, 2006e           |
| Nitrogen emitted as N <sub>2</sub> O      | 2003     | 0.02 g / g                 | IPCC, 2006e           |
| Nitrogen emitted as N <sub>2</sub> O      | 2004     | 0.02 g / g                 | IPCC, 2006e           |
| Nitrogen emitted as N <sub>2</sub> O      | 2005     | 0.02 g / g                 | IPCC, 2006e           |
| Nitrogen emitted as N <sub>2</sub> O      | 2006     | 0.02 g / g                 | IPCC, 2006e           |
| Nitrogen emitted as N <sub>2</sub> O      | 2007     | 0.02 g / g                 | IPCC, 2006e           |
| Nitrogen emitted as N <sub>2</sub> O      | 2008     | 0.02 g / g                 | IPCC, 2006e           |
| Nitrogen emitted as N <sub>2</sub> O      | 2009     | 0.02 g / g                 | IPCC, 2006e           |
| Nitrogen emitted as N <sub>2</sub> O      | 2010     | 0.02 g / g                 | IPCC, 2006e           |
| Nitrogen emitted as N <sub>2</sub> O      | 2011     | 0.02 g / g                 | IPCC, 2006e           |
| Nitrogen emitted as N <sub>2</sub> O      | 2012     | 0.02 g / g                 | IPCC, 2006e           |
| Nitrogen emitted as N <sub>2</sub> O      | 2013     | 0.02 g / g                 | IPCC, 2006e           |
| Nitrogen emitted as N <sub>2</sub> O      | 2014     | 0.02 g / g                 | IPCC, 2006e           |



**Activity = Nitrogen in unmanaged manure - Dairy heifers**

| - Variable Name -                            | - Year - | - Value and Units -       | - Reference -         |
|--|----------|---------------------------|-----------------------|
| Nitrogen in unmanaged manure - Dairy heifers | 2000     | 5.87 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in unmanaged manure - Dairy heifers | 2001     | 6.03 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in unmanaged manure - Dairy heifers | 2002     | 6.16 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in unmanaged manure - Dairy heifers | 2003     | 6.27 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in unmanaged manure - Dairy heifers | 2004     | 5.62 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in unmanaged manure - Dairy heifers | 2005     | 5.89 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in unmanaged manure - Dairy heifers | 2006     | 6.06 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in unmanaged manure - Dairy heifers | 2007     | 6.02 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in unmanaged manure - Dairy heifers | 2008     | 5.86 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in unmanaged manure - Dairy heifers | 2009     | 5.75 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in unmanaged manure - Dairy heifers | 2010     | 5.57 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in unmanaged manure - Dairy heifers | 2011     | 5.58 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in unmanaged manure - Dairy heifers | 2012     | 6.13 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in unmanaged manure - Dairy heifers | 2013     | 5.7 Gg (thousand tonnes)  | Compilation, see text |
| Nitrogen in unmanaged manure - Dairy heifers | 2014     | 5.5 Gg (thousand tonnes)  | Compilation, see text |
| Nitrogen emitted as N <sub>2</sub> O         | 2000     | 0.02 g / g                | IPCC, 2006e           |
| Nitrogen emitted as N <sub>2</sub> O         | 2001     | 0.02 g / g                | IPCC, 2006e           |
| Nitrogen emitted as N <sub>2</sub> O         | 2002     | 0.02 g / g                | IPCC, 2006e           |
| Nitrogen emitted as N <sub>2</sub> O         | 2003     | 0.02 g / g                | IPCC, 2006e           |
| Nitrogen emitted as N <sub>2</sub> O         | 2004     | 0.02 g / g                | IPCC, 2006e           |
| Nitrogen emitted as N <sub>2</sub> O         | 2005     | 0.02 g / g                | IPCC, 2006e           |
| Nitrogen emitted as N <sub>2</sub> O         | 2006     | 0.02 g / g                | IPCC, 2006e           |
| Nitrogen emitted as N <sub>2</sub> O         | 2007     | 0.02 g / g                | IPCC, 2006e           |
| Nitrogen emitted as N <sub>2</sub> O         | 2008     | 0.02 g / g                | IPCC, 2006e           |
| Nitrogen emitted as N <sub>2</sub> O         | 2009     | 0.02 g / g                | IPCC, 2006e           |
| Nitrogen emitted as N <sub>2</sub> O         | 2010     | 0.02 g / g                | IPCC, 2006e           |
| Nitrogen emitted as N <sub>2</sub> O         | 2011     | 0.02 g / g                | IPCC, 2006e           |
| Nitrogen emitted as N <sub>2</sub> O         | 2012     | 0.02 g / g                | IPCC, 2006e           |
| Nitrogen emitted as N <sub>2</sub> O         | 2013     | 0.02 g / g                | IPCC, 2006e           |
| Nitrogen emitted as N <sub>2</sub> O         | 2014     | 0.02 g / g                | IPCC, 2006e           |

**Activity = Nitrogen in unmanaged manure - Poultry**

| - Variable Name -                      | - Year - | - Value and Units - | - Reference -         |
|--|----------|---------------------|-----------------------|
| Nitrogen in unmanaged manure - Poultry | 2000     | 164.66 Mg (tonnes)  | Compilation, see text |
| Nitrogen in unmanaged manure - Poultry | 2001     | 166.92 Mg (tonnes)  | Compilation, see text |
| Nitrogen in unmanaged manure - Poultry | 2002     | 162.37 Mg (tonnes)  | Compilation, see text |
| Nitrogen in unmanaged manure - Poultry | 2003     | 155.54 Mg (tonnes)  | Compilation, see text |
| Nitrogen in unmanaged manure - Poultry | 2004     | 141.66 Mg (tonnes)  | Compilation, see text |
| Nitrogen in unmanaged manure - Poultry | 2005     | 129.77 Mg (tonnes)  | Compilation, see text |
| Nitrogen in unmanaged manure - Poultry | 2006     | 140.22 Mg (tonnes)  | Compilation, see text |
| Nitrogen in unmanaged manure - Poultry | 2007     | 134.36 Mg (tonnes)  | Compilation, see text |
| Nitrogen in unmanaged manure - Poultry | 2008     | 127.78 Mg (tonnes)  | Compilation, see text |
| Nitrogen in unmanaged manure - Poultry | 2009     | 123.73 Mg (tonnes)  | Compilation, see text |
| Nitrogen in unmanaged manure - Poultry | 2010     | 125.38 Mg (tonnes)  | Compilation, see text |
| Nitrogen in unmanaged manure - Poultry | 2011     | 111.77 Mg (tonnes)  | Compilation, see text |
| Nitrogen in unmanaged manure - Poultry | 2012     | 111.85 Mg (tonnes)  | Compilation, see text |
| Nitrogen in unmanaged manure - Poultry | 2013     | 98.8 Mg (tonnes)    | Compilation, see text |
| Nitrogen in unmanaged manure - Poultry | 2014     | 88.27 Mg (tonnes)   | Compilation, see text |
| Nitrogen emitted as N <sub>2</sub> O   | 2000     | 0.02 g / g          | IPCC, 2006e           |
| Nitrogen emitted as N <sub>2</sub> O   | 2001     | 0.02 g / g          | IPCC, 2006e           |
| Nitrogen emitted as N <sub>2</sub> O   | 2002     | 0.02 g / g          | IPCC, 2006e           |
| Nitrogen emitted as N <sub>2</sub> O   | 2003     | 0.02 g / g          | IPCC, 2006e           |
| Nitrogen emitted as N <sub>2</sub> O   | 2004     | 0.02 g / g          | IPCC, 2006e           |
| Nitrogen emitted as N <sub>2</sub> O   | 2005     | 0.02 g / g          | IPCC, 2006e           |

|                         |      |            |             |
|-------------------------|------|------------|-------------|
| Nitrogen emitted as N2O | 2006 | 0.02 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O | 2007 | 0.02 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O | 2008 | 0.02 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O | 2009 | 0.02 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O | 2010 | 0.02 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O | 2011 | 0.02 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O | 2012 | 0.02 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O | 2013 | 0.02 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O | 2014 | 0.02 g / g | IPCC, 2006e |

**Activity = Nitrogen in unmanaged manure - Sheep, goat, horse**

| - Variable Name -                                 | - Year - | - Value and Units -        | - Reference -         |
|---|----------|----------------------------|-----------------------|
| Nitrogen in unmanaged manure - Sheep, goat, horse | 2000     | 24.47 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in unmanaged manure - Sheep, goat, horse | 2001     | 24.76 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in unmanaged manure - Sheep, goat, horse | 2002     | 25.77 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in unmanaged manure - Sheep, goat, horse | 2003     | 28.43 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in unmanaged manure - Sheep, goat, horse | 2004     | 30.73 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in unmanaged manure - Sheep, goat, horse | 2005     | 34.03 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in unmanaged manure - Sheep, goat, horse | 2006     | 34.11 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in unmanaged manure - Sheep, goat, horse | 2007     | 33.29 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in unmanaged manure - Sheep, goat, horse | 2008     | 32.82 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in unmanaged manure - Sheep, goat, horse | 2009     | 33.99 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in unmanaged manure - Sheep, goat, horse | 2010     | 34.18 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in unmanaged manure - Sheep, goat, horse | 2011     | 34.54 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in unmanaged manure - Sheep, goat, horse | 2012     | 34.48 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in unmanaged manure - Sheep, goat, horse | 2013     | 34.34 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in unmanaged manure - Sheep, goat, horse | 2014     | 34.52 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen emitted as N2O                           | 2000     | 0.01 g / g                 | IPCC, 2006e           |
| Nitrogen emitted as N2O                           | 2001     | 0.01 g / g                 | IPCC, 2006e           |
| Nitrogen emitted as N2O                           | 2002     | 0.01 g / g                 | IPCC, 2006e           |
| Nitrogen emitted as N2O                           | 2003     | 0.01 g / g                 | IPCC, 2006e           |
| Nitrogen emitted as N2O                           | 2004     | 0.01 g / g                 | IPCC, 2006e           |
| Nitrogen emitted as N2O                           | 2005     | 0.01 g / g                 | IPCC, 2006e           |
| Nitrogen emitted as N2O                           | 2006     | 0.01 g / g                 | IPCC, 2006e           |
| Nitrogen emitted as N2O                           | 2007     | 0.01 g / g                 | IPCC, 2006e           |
| Nitrogen emitted as N2O                           | 2008     | 0.01 g / g                 | IPCC, 2006e           |
| Nitrogen emitted as N2O                           | 2009     | 0.01 g / g                 | IPCC, 2006e           |
| Nitrogen emitted as N2O                           | 2010     | 0.01 g / g                 | IPCC, 2006e           |
| Nitrogen emitted as N2O                           | 2011     | 0.01 g / g                 | IPCC, 2006e           |
| Nitrogen emitted as N2O                           | 2012     | 0.01 g / g                 | IPCC, 2006e           |
| Nitrogen emitted as N2O                           | 2013     | 0.01 g / g                 | IPCC, 2006e           |
| Nitrogen emitted as N2O                           | 2014     | 0.01 g / g                 | IPCC, 2006e           |

**Activity = Nitrogen in unmanaged manure - Swine**

| - Variable Name -                    | - Year - | - Value and Units - | - Reference -         |
|--------------------------------------|----------|---------------------|-----------------------|
| Nitrogen in unmanaged manure - Swine | 2000     | 163.57 Mg (tonnes)  | Compilation, see text |
| Nitrogen in unmanaged manure - Swine | 2001     | 130.47 Mg (tonnes)  | Compilation, see text |
| Nitrogen in unmanaged manure - Swine | 2002     | 200.42 Mg (tonnes)  | Compilation, see text |
| Nitrogen in unmanaged manure - Swine | 2003     | 177.77 Mg (tonnes)  | Compilation, see text |
| Nitrogen in unmanaged manure - Swine | 2004     | 178.8 Mg (tonnes)   | Compilation, see text |
| Nitrogen in unmanaged manure - Swine | 2005     | 166.67 Mg (tonnes)  | Compilation, see text |
| Nitrogen in unmanaged manure - Swine | 2006     | 156.52 Mg (tonnes)  | Compilation, see text |
| Nitrogen in unmanaged manure - Swine | 2007     | 165.55 Mg (tonnes)  | Compilation, see text |
| Nitrogen in unmanaged manure - Swine | 2008     | 83.63 Mg (tonnes)   | Compilation, see text |
| Nitrogen in unmanaged manure - Swine | 2009     | 116.25 Mg (tonnes)  | Compilation, see text |
| Nitrogen in unmanaged manure - Swine | 2010     | 109.85 Mg (tonnes)  | Compilation, see text |

|                                      |      |                    |                       |
|--------------------------------------|------|--------------------|-----------------------|
| Nitrogen in unmanaged manure - Swine | 2011 | 116 Mg (tonnes)    | Compilation, see text |
| Nitrogen in unmanaged manure - Swine | 2012 | 114.16 Mg (tonnes) | Compilation, see text |
| Nitrogen in unmanaged manure - Swine | 2013 | 105.38 Mg (tonnes) | Compilation, see text |
| Nitrogen in unmanaged manure - Swine | 2014 | 116.95 Mg (tonnes) | Compilation, see text |
| Nitrogen emitted as N <sub>2</sub> O | 2000 | 0.02 g / g         | IPCC, 2006e           |
| Nitrogen emitted as N <sub>2</sub> O | 2001 | 0.02 g / g         | IPCC, 2006e           |
| Nitrogen emitted as N <sub>2</sub> O | 2002 | 0.02 g / g         | IPCC, 2006e           |
| Nitrogen emitted as N <sub>2</sub> O | 2003 | 0.02 g / g         | IPCC, 2006e           |
| Nitrogen emitted as N <sub>2</sub> O | 2004 | 0.02 g / g         | IPCC, 2006e           |
| Nitrogen emitted as N <sub>2</sub> O | 2005 | 0.02 g / g         | IPCC, 2006e           |
| Nitrogen emitted as N <sub>2</sub> O | 2006 | 0.02 g / g         | IPCC, 2006e           |
| Nitrogen emitted as N <sub>2</sub> O | 2007 | 0.02 g / g         | IPCC, 2006e           |
| Nitrogen emitted as N <sub>2</sub> O | 2008 | 0.02 g / g         | IPCC, 2006e           |
| Nitrogen emitted as N <sub>2</sub> O | 2009 | 0.02 g / g         | IPCC, 2006e           |
| Nitrogen emitted as N <sub>2</sub> O | 2010 | 0.02 g / g         | IPCC, 2006e           |
| Nitrogen emitted as N <sub>2</sub> O | 2011 | 0.02 g / g         | IPCC, 2006e           |
| Nitrogen emitted as N <sub>2</sub> O | 2012 | 0.02 g / g         | IPCC, 2006e           |
| Nitrogen emitted as N <sub>2</sub> O | 2013 | 0.02 g / g         | IPCC, 2006e           |
| Nitrogen emitted as N <sub>2</sub> O | 2014 | 0.02 g / g         | IPCC, 2006e           |

**Activity = Residential use of nitrogen fertilizer on turf - Synthetic fertilizers**

| - Variable Name -  | - Year - | - Value and Units - | - Reference -         |
|--|----------|---------------------|-----------------------|
| Residential use of nitrogen fertilizer on turf - Synthetic fertilizers | 2000     | 131,015 ton         | Compilation, see text |
| Residential use of nitrogen fertilizer on turf - Synthetic fertilizers | 2001     | 132,988 ton         | Compilation, see text |
| Residential use of nitrogen fertilizer on turf - Synthetic fertilizers | 2002     | 134,628 ton         | Compilation, see text |
| Residential use of nitrogen fertilizer on turf - Synthetic fertilizers | 2003     | 136,364 ton         | Compilation, see text |
| Residential use of nitrogen fertilizer on turf - Synthetic fertilizers | 2004     | 137,766 ton         | Compilation, see text |
| Residential use of nitrogen fertilizer on turf - Synthetic fertilizers | 2005     | 138,663 ton         | Compilation, see text |
| Residential use of nitrogen fertilizer on turf - Synthetic fertilizers | 2006     | 139,670 ton         | Compilation, see text |
| Residential use of nitrogen fertilizer on turf - Synthetic fertilizers | 2007     | 140,848 ton         | Compilation, see text |
| Residential use of nitrogen fertilizer on turf - Synthetic fertilizers | 2008     | 142,018 ton         | Compilation, see text |
| Residential use of nitrogen fertilizer on turf - Synthetic fertilizers | 2009     | 142,870 ton         | Compilation, see text |
| Residential use of nitrogen fertilizer on turf - Synthetic fertilizers | 2010     | 143,867 ton         | Compilation, see text |
| Residential use of nitrogen fertilizer on turf - Synthetic fertilizers | 2011     | 145,277 ton         | Compilation, see text |
| Residential use of nitrogen fertilizer on turf - Synthetic fertilizers | 2012     | 146,667 ton         | Compilation, see text |
| Residential use of nitrogen fertilizer on turf - Synthetic fertilizers | 2013     | 148,088 ton         | Compilation, see text |
| Residential use of nitrogen fertilizer on turf - Synthetic fertilizers | 2014     | 149,518 ton         | Compilation, see text |
| Nitrogen emitted as N <sub>2</sub> O                                   | 2000     | 0.01 g / g          | IPCC, 2006e           |
| Nitrogen emitted as N <sub>2</sub> O                                   | 2001     | 0.01 g / g          | IPCC, 2006e           |
| Nitrogen emitted as N <sub>2</sub> O                                   | 2002     | 0.01 g / g          | IPCC, 2006e           |
| Nitrogen emitted as N <sub>2</sub> O                                   | 2003     | 0.01 g / g          | IPCC, 2006e           |
| Nitrogen emitted as N <sub>2</sub> O                                   | 2004     | 0.01 g / g          | IPCC, 2006e           |
| Nitrogen emitted as N <sub>2</sub> O                                   | 2005     | 0.01 g / g          | IPCC, 2006e           |
| Nitrogen emitted as N <sub>2</sub> O                                   | 2006     | 0.01 g / g          | IPCC, 2006e           |
| Nitrogen emitted as N <sub>2</sub> O                                   | 2007     | 0.01 g / g          | IPCC, 2006e           |
| Nitrogen emitted as N <sub>2</sub> O                                   | 2008     | 0.01 g / g          | IPCC, 2006e           |

|                                      |      |            |             |
|--------------------------------------|------|------------|-------------|
| Nitrogen emitted as N <sub>2</sub> O | 2009 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N <sub>2</sub> O | 2010 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N <sub>2</sub> O | 2011 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N <sub>2</sub> O | 2012 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N <sub>2</sub> O | 2013 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N <sub>2</sub> O | 2014 | 0.01 g / g | IPCC, 2006e |

**IPCC category = 3C5 — Aggregate Sources and Non-CO<sub>2</sub> Emissions Sources on Land - Indirect N<sub>2</sub>O Emissions from Managed Soils**

**Activity = Commercial use of nitrogen fertilizer on turf - Synthetic fertilizers**

| - Variable Name -   | - Year - | - Value and Units - | - Reference -         |
|---|----------|---------------------|-----------------------|
| Commercial use of nitrogen fertilizer on turf - Synthetic fertilizers | 1990     | 78,000 ton          | Compilation, see text |
| Commercial use of nitrogen fertilizer on turf - Synthetic fertilizers | 1991     | 79,648 ton          | Compilation, see text |
| Commercial use of nitrogen fertilizer on turf - Synthetic fertilizers | 1992     | 81,030 ton          | Compilation, see text |
| Commercial use of nitrogen fertilizer on turf - Synthetic fertilizers | 1993     | 81,885 ton          | Compilation, see text |
| Commercial use of nitrogen fertilizer on turf - Synthetic fertilizers | 1994     | 82,433 ton          | Compilation, see text |
| Commercial use of nitrogen fertilizer on turf - Synthetic fertilizers | 1995     | 82,925 ton          | Compilation, see text |
| Commercial use of nitrogen fertilizer on turf - Synthetic fertilizers | 1996     | 83,581 ton          | Compilation, see text |
| Commercial use of nitrogen fertilizer on turf - Synthetic fertilizers | 1997     | 84,862 ton          | Compilation, see text |
| Commercial use of nitrogen fertilizer on turf - Synthetic fertilizers | 1998     | 85,935 ton          | Compilation, see text |
| Commercial use of nitrogen fertilizer on turf - Synthetic fertilizers | 1999     | 87,388 ton          | Compilation, see text |
| Commercial use of nitrogen fertilizer on turf - Synthetic fertilizers | 2000     | 88,910 ton          | Compilation, see text |
| Commercial use of nitrogen fertilizer on turf - Synthetic fertilizers | 2001     | 90,249 ton          | Compilation, see text |
| Commercial use of nitrogen fertilizer on turf - Synthetic fertilizers | 2002     | 91,362 ton          | Compilation, see text |
| Commercial use of nitrogen fertilizer on turf - Synthetic fertilizers | 2003     | 92,540 ton          | Compilation, see text |
| Commercial use of nitrogen fertilizer on turf - Synthetic fertilizers | 2004     | 93,491 ton          | Compilation, see text |
| Commercial use of nitrogen fertilizer on turf - Synthetic fertilizers | 2005     | 94,100 ton          | Compilation, see text |
| Commercial use of nitrogen fertilizer on turf - Synthetic fertilizers | 2006     | 94,783 ton          | Compilation, see text |
| Commercial use of nitrogen fertilizer on turf - Synthetic fertilizers | 2007     | 95,583 ton          | Compilation, see text |
| Commercial use of nitrogen fertilizer on turf - Synthetic fertilizers | 2008     | 96,377 ton          | Compilation, see text |
| Commercial use of nitrogen fertilizer on turf - Synthetic fertilizers | 2009     | 96,955 ton          | Compilation, see text |
| Commercial use of nitrogen fertilizer on turf - Synthetic fertilizers | 2010     | 97,632 ton          | Compilation, see text |
| Commercial use of nitrogen fertilizer on turf - Synthetic fertilizers | 2011     | 98,588 ton          | Compilation, see text |
| Commercial use of nitrogen fertilizer on turf - Synthetic fertilizers | 2012     | 99,532 ton          | Compilation, see text |
| Commercial use of nitrogen fertilizer on turf - Synthetic fertilizers | 2013     | 100,496 ton         | Compilation, see text |
| Commercial use of nitrogen fertilizer on turf - Synthetic fertilizers | 2014     | 101,466 ton         | Compilation, see text |
| Leached nitrogen emitted as N <sub>2</sub> O                          | 1990     | 7.500E-03           | IPCC, 2006e           |
| Leached nitrogen emitted as N <sub>2</sub> O                          | 1991     | 7.500E-03           | IPCC, 2006e           |
| Leached nitrogen emitted as N <sub>2</sub> O                          | 1992     | 7.500E-03           | IPCC, 2006e           |

|                                 |      |            |             |
|---------------------------------|------|------------|-------------|
| Leached nitrogen emitted as N2O | 1993 | 7.500E-03  | IPCC, 2006e |
| Leached nitrogen emitted as N2O | 1994 | 7.500E-03  | IPCC, 2006e |
| Leached nitrogen emitted as N2O | 1995 | 7.500E-03  | IPCC, 2006e |
| Leached nitrogen emitted as N2O | 1996 | 7.500E-03  | IPCC, 2006e |
| Leached nitrogen emitted as N2O | 1997 | 7.500E-03  | IPCC, 2006e |
| Leached nitrogen emitted as N2O | 1998 | 7.500E-03  | IPCC, 2006e |
| Leached nitrogen emitted as N2O | 1999 | 7.500E-03  | IPCC, 2006e |
| Leached nitrogen emitted as N2O | 2000 | 7.500E-03  | IPCC, 2006e |
| Leached nitrogen emitted as N2O | 2001 | 7.500E-03  | IPCC, 2006e |
| Leached nitrogen emitted as N2O | 2002 | 7.500E-03  | IPCC, 2006e |
| Leached nitrogen emitted as N2O | 2003 | 7.500E-03  | IPCC, 2006e |
| Leached nitrogen emitted as N2O | 2004 | 7.500E-03  | IPCC, 2006e |
| Leached nitrogen emitted as N2O | 2005 | 7.500E-03  | IPCC, 2006e |
| Leached nitrogen emitted as N2O | 2006 | 7.500E-03  | IPCC, 2006e |
| Leached nitrogen emitted as N2O | 2007 | 7.500E-03  | IPCC, 2006e |
| Leached nitrogen emitted as N2O | 2008 | 7.500E-03  | IPCC, 2006e |
| Leached nitrogen emitted as N2O | 2009 | 7.500E-03  | IPCC, 2006e |
| Leached nitrogen emitted as N2O | 2010 | 7.500E-03  | IPCC, 2006e |
| Leached nitrogen emitted as N2O | 2011 | 7.500E-03  | IPCC, 2006e |
| Leached nitrogen emitted as N2O | 2012 | 7.500E-03  | IPCC, 2006e |
| Leached nitrogen emitted as N2O | 2013 | 7.500E-03  | IPCC, 2006e |
| Leached nitrogen emitted as N2O | 2014 | 7.500E-03  | IPCC, 2006e |
| Leaching rate                   | 1990 | 0.3        | IPCC, 2006e |
| Leaching rate                   | 1991 | 0.3        | IPCC, 2006e |
| Leaching rate                   | 1992 | 0.3        | IPCC, 2006e |
| Leaching rate                   | 1993 | 0.3        | IPCC, 2006e |
| Leaching rate                   | 1994 | 0.3        | IPCC, 2006e |
| Leaching rate                   | 1995 | 0.3        | IPCC, 2006e |
| Leaching rate                   | 1996 | 0.3        | IPCC, 2006e |
| Leaching rate                   | 1997 | 0.3        | IPCC, 2006e |
| Leaching rate                   | 1998 | 0.3        | IPCC, 2006e |
| Leaching rate                   | 1999 | 0.3        | IPCC, 2006e |
| Leaching rate                   | 2000 | 0.3        | IPCC, 2006e |
| Leaching rate                   | 2001 | 0.3        | IPCC, 2006e |
| Leaching rate                   | 2002 | 0.3        | IPCC, 2006e |
| Leaching rate                   | 2003 | 0.3        | IPCC, 2006e |
| Leaching rate                   | 2004 | 0.3        | IPCC, 2006e |
| Leaching rate                   | 2005 | 0.3        | IPCC, 2006e |
| Leaching rate                   | 2006 | 0.3        | IPCC, 2006e |
| Leaching rate                   | 2007 | 0.3        | IPCC, 2006e |
| Leaching rate                   | 2008 | 0.3        | IPCC, 2006e |
| Leaching rate                   | 2009 | 0.3        | IPCC, 2006e |
| Leaching rate                   | 2010 | 0.3        | IPCC, 2006e |
| Leaching rate                   | 2011 | 0.3        | IPCC, 2006e |
| Leaching rate                   | 2012 | 0.3        | IPCC, 2006e |
| Leaching rate                   | 2013 | 0.3        | IPCC, 2006e |
| Leaching rate                   | 2014 | 0.3        | IPCC, 2006e |
| Nitrogen emitted as N2O         | 1990 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O         | 1991 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O         | 1992 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O         | 1993 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O         | 1994 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O         | 1995 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O         | 1996 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O         | 1997 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O         | 1998 | 0.01 g / g | IPCC, 2006e |



|                                     |      |            |             |
|-------------------------------------|------|------------|-------------|
| Nitrogen emitted as N2O             | 1999 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O             | 2000 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O             | 2001 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O             | 2002 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O             | 2003 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O             | 2004 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O             | 2005 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O             | 2006 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O             | 2007 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O             | 2008 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O             | 2009 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O             | 2010 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O             | 2011 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O             | 2012 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O             | 2013 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O             | 2014 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 1990 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 1991 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 1992 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 1993 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 1994 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 1995 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 1996 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 1997 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 1998 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 1999 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 2000 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 2001 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 2002 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 2003 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 2004 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 2005 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 2006 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 2007 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 2008 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 2009 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 2010 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 2011 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 2012 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 2013 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 2014 | 0.01 g / g | IPCC, 2006e |
| Volatilization rate                 | 1990 | 0.1 g / g  | IPCC, 2006e |
| Volatilization rate                 | 1991 | 0.1 g / g  | IPCC, 2006e |
| Volatilization rate                 | 1992 | 0.1 g / g  | IPCC, 2006e |
| Volatilization rate                 | 1993 | 0.1 g / g  | IPCC, 2006e |
| Volatilization rate                 | 1994 | 0.1 g / g  | IPCC, 2006e |
| Volatilization rate                 | 1995 | 0.1 g / g  | IPCC, 2006e |
| Volatilization rate                 | 1996 | 0.1 g / g  | IPCC, 2006e |
| Volatilization rate                 | 1997 | 0.1 g / g  | IPCC, 2006e |
| Volatilization rate                 | 1998 | 0.1 g / g  | IPCC, 2006e |
| Volatilization rate                 | 1999 | 0.1 g / g  | IPCC, 2006e |
| Volatilization rate                 | 2000 | 0.1 g / g  | IPCC, 2006e |
| Volatilization rate                 | 2001 | 0.1 g / g  | IPCC, 2006e |
| Volatilization rate                 | 2002 | 0.1 g / g  | IPCC, 2006e |
| Volatilization rate                 | 2003 | 0.1 g / g  | IPCC, 2006e |
| Volatilization rate                 | 2004 | 0.1 g / g  | IPCC, 2006e |

|                     |      |           |             |
|---------------------|------|-----------|-------------|
| Volatilization rate | 2005 | 0.1 g / g | IPCC, 2006e |
| Volatilization rate | 2006 | 0.1 g / g | IPCC, 2006e |
| Volatilization rate | 2007 | 0.1 g / g | IPCC, 2006e |
| Volatilization rate | 2008 | 0.1 g / g | IPCC, 2006e |
| Volatilization rate | 2009 | 0.1 g / g | IPCC, 2006e |
| Volatilization rate | 2010 | 0.1 g / g | IPCC, 2006e |
| Volatilization rate | 2011 | 0.1 g / g | IPCC, 2006e |
| Volatilization rate | 2012 | 0.1 g / g | IPCC, 2006e |
| Volatilization rate | 2013 | 0.1 g / g | IPCC, 2006e |
| Volatilization rate | 2014 | 0.1 g / g | IPCC, 2006e |

**Activity = Nitrogen applied in fertilizer - Organic fertilizers**

| - Variable Name -                                    | - Year - | - Value and Units - | - Reference -        |
|--|----------|---------------------|----------------------|
| Nitrogen applied in fertilizer - Organic fertilizers | 1990     | 3,374 ton           | CDFA, various years  |
| Nitrogen applied in fertilizer - Organic fertilizers | 1991     | 2,397 ton           | CDFA, various years  |
| Nitrogen applied in fertilizer - Organic fertilizers | 1992     | 3,477 ton           | CDFA, various years  |
| Nitrogen applied in fertilizer - Organic fertilizers | 1993     | 1,712 ton           | CDFA, various years  |
| Nitrogen applied in fertilizer - Organic fertilizers | 1994     | 4,792 ton           | CDFA, various years  |
| Nitrogen applied in fertilizer - Organic fertilizers | 1995     | 4,308 ton           | CDFA, various years  |
| Nitrogen applied in fertilizer - Organic fertilizers | 1996     | 3,590 ton           | CDFA, various years  |
| Nitrogen applied in fertilizer - Organic fertilizers | 1997     | 1,522 ton           | CDFA, various years  |
| Nitrogen applied in fertilizer - Organic fertilizers | 1998     | 1,260 ton           | CDFA, various years  |
| Nitrogen applied in fertilizer - Organic fertilizers | 1999     | 1,365 ton           | CDFA, various years  |
| Nitrogen applied in fertilizer - Organic fertilizers | 2000     | 9,864 ton           | CDFA, various years  |
| Nitrogen applied in fertilizer - Organic fertilizers | 2001     | 3,029 ton           | CDFA, various years  |
| Nitrogen applied in fertilizer - Organic fertilizers | 2002     | 4,760 ton           | CDFA, various years  |
| Nitrogen applied in fertilizer - Organic fertilizers | 2003     | 6,350 ton           | CDFA, various years  |
| Nitrogen applied in fertilizer - Organic fertilizers | 2004     | 2,417 ton           | CDFA, various years  |
| Nitrogen applied in fertilizer - Organic fertilizers | 2005     | 3,559 ton           | CDFA, various years  |
| Nitrogen applied in fertilizer - Organic fertilizers | 2006     | 2,289 ton           | CDFA, various years  |
| Nitrogen applied in fertilizer - Organic fertilizers | 2007     | 895 ton             | CDFA, various years  |
| Nitrogen applied in fertilizer - Organic fertilizers | 2008     | 3,248 ton           | CDFA, various years  |
| Nitrogen applied in fertilizer - Organic fertilizers | 2009     | 6,658 ton           | CDFA, various years  |
| Nitrogen applied in fertilizer - Organic fertilizers | 2010     | 67 ton              | CDFA, various years  |
| Nitrogen applied in fertilizer - Organic fertilizers | 2011     | 185 ton             | CDFA, various years  |
| Nitrogen applied in fertilizer - Organic fertilizers | 2012     | 5,184 ton           | CDFA, various years  |
| Nitrogen applied in fertilizer - Organic fertilizers | 2013     | 5,184 ton           | Assume equal to 2012 |
| Nitrogen applied in fertilizer - Organic fertilizers | 2014     | 5,184 ton           | Assume equal to 2012 |
| Leached nitrogen emitted as N <sub>2</sub> O         | 1990     | 7.500E-03           | IPCC, 2006e          |
| Leached nitrogen emitted as N <sub>2</sub> O         | 1991     | 7.500E-03           | IPCC, 2006e          |
| Leached nitrogen emitted as N <sub>2</sub> O         | 1992     | 7.500E-03           | IPCC, 2006e          |
| Leached nitrogen emitted as N <sub>2</sub> O         | 1993     | 7.500E-03           | IPCC, 2006e          |
| Leached nitrogen emitted as N <sub>2</sub> O         | 1994     | 7.500E-03           | IPCC, 2006e          |
| Leached nitrogen emitted as N <sub>2</sub> O         | 1995     | 7.500E-03           | IPCC, 2006e          |
| Leached nitrogen emitted as N <sub>2</sub> O         | 1996     | 7.500E-03           | IPCC, 2006e          |
| Leached nitrogen emitted as N <sub>2</sub> O         | 1997     | 7.500E-03           | IPCC, 2006e          |
| Leached nitrogen emitted as N <sub>2</sub> O         | 1998     | 7.500E-03           | IPCC, 2006e          |
| Leached nitrogen emitted as N <sub>2</sub> O         | 1999     | 7.500E-03           | IPCC, 2006e          |
| Leached nitrogen emitted as N <sub>2</sub> O         | 2000     | 7.500E-03           | IPCC, 2006e          |
| Leached nitrogen emitted as N <sub>2</sub> O         | 2001     | 7.500E-03           | IPCC, 2006e          |
| Leached nitrogen emitted as N <sub>2</sub> O         | 2002     | 7.500E-03           | IPCC, 2006e          |
| Leached nitrogen emitted as N <sub>2</sub> O         | 2003     | 7.500E-03           | IPCC, 2006e          |
| Leached nitrogen emitted as N <sub>2</sub> O         | 2004     | 7.500E-03           | IPCC, 2006e          |
| Leached nitrogen emitted as N <sub>2</sub> O         | 2005     | 7.500E-03           | IPCC, 2006e          |
| Leached nitrogen emitted as N <sub>2</sub> O         | 2006     | 7.500E-03           | IPCC, 2006e          |
| Leached nitrogen emitted as N <sub>2</sub> O         | 2007     | 7.500E-03           | IPCC, 2006e          |

|                                 |      |            |             |
|---------------------------------|------|------------|-------------|
| Leached nitrogen emitted as N2O | 2008 | 7.500E-03  | IPCC, 2006e |
| Leached nitrogen emitted as N2O | 2009 | 7.500E-03  | IPCC, 2006e |
| Leached nitrogen emitted as N2O | 2010 | 7.500E-03  | IPCC, 2006e |
| Leached nitrogen emitted as N2O | 2011 | 7.500E-03  | IPCC, 2006e |
| Leached nitrogen emitted as N2O | 2012 | 7.500E-03  | IPCC, 2006e |
| Leached nitrogen emitted as N2O | 2013 | 7.500E-03  | IPCC, 2006e |
| Leached nitrogen emitted as N2O | 2014 | 7.500E-03  | IPCC, 2006e |
| Leaching rate                   | 1990 | 0.3        | IPCC, 2006e |
| Leaching rate                   | 1991 | 0.3        | IPCC, 2006e |
| Leaching rate                   | 1992 | 0.3        | IPCC, 2006e |
| Leaching rate                   | 1993 | 0.3        | IPCC, 2006e |
| Leaching rate                   | 1994 | 0.3        | IPCC, 2006e |
| Leaching rate                   | 1995 | 0.3        | IPCC, 2006e |
| Leaching rate                   | 1996 | 0.3        | IPCC, 2006e |
| Leaching rate                   | 1997 | 0.3        | IPCC, 2006e |
| Leaching rate                   | 1998 | 0.3        | IPCC, 2006e |
| Leaching rate                   | 1999 | 0.3        | IPCC, 2006e |
| Leaching rate                   | 2000 | 0.3        | IPCC, 2006e |
| Leaching rate                   | 2001 | 0.3        | IPCC, 2006e |
| Leaching rate                   | 2002 | 0.3        | IPCC, 2006e |
| Leaching rate                   | 2003 | 0.3        | IPCC, 2006e |
| Leaching rate                   | 2004 | 0.3        | IPCC, 2006e |
| Leaching rate                   | 2005 | 0.3        | IPCC, 2006e |
| Leaching rate                   | 2006 | 0.3        | IPCC, 2006e |
| Leaching rate                   | 2007 | 0.3        | IPCC, 2006e |
| Leaching rate                   | 2008 | 0.3        | IPCC, 2006e |
| Leaching rate                   | 2009 | 0.3        | IPCC, 2006e |
| Leaching rate                   | 2010 | 0.3        | IPCC, 2006e |
| Leaching rate                   | 2011 | 0.3        | IPCC, 2006e |
| Leaching rate                   | 2012 | 0.3        | IPCC, 2006e |
| Leaching rate                   | 2013 | 0.3        | IPCC, 2006e |
| Leaching rate                   | 2014 | 0.3        | IPCC, 2006e |
| Nitrogen emitted as N2O         | 1990 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O         | 1991 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O         | 1992 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O         | 1993 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O         | 1994 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O         | 1995 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O         | 1996 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O         | 1997 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O         | 1998 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O         | 1999 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O         | 2000 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O         | 2001 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O         | 2002 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O         | 2003 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O         | 2004 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O         | 2005 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O         | 2006 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O         | 2007 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O         | 2008 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O         | 2009 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O         | 2010 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O         | 2011 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O         | 2012 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O         | 2013 | 0.01 g / g | IPCC, 2006e |

|  |      |            |             |
|--|------|------------|-------------|
| Nitrogen emitted as N <sub>2</sub> O             | 2014 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N <sub>2</sub> O | 1990 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N <sub>2</sub> O | 1991 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N <sub>2</sub> O | 1992 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N <sub>2</sub> O | 1993 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N <sub>2</sub> O | 1994 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N <sub>2</sub> O | 1995 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N <sub>2</sub> O | 1996 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N <sub>2</sub> O | 1997 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N <sub>2</sub> O | 1998 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N <sub>2</sub> O | 1999 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N <sub>2</sub> O | 2000 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N <sub>2</sub> O | 2001 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N <sub>2</sub> O | 2002 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N <sub>2</sub> O | 2003 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N <sub>2</sub> O | 2004 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N <sub>2</sub> O | 2005 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N <sub>2</sub> O | 2006 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N <sub>2</sub> O | 2007 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N <sub>2</sub> O | 2008 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N <sub>2</sub> O | 2009 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N <sub>2</sub> O | 2010 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N <sub>2</sub> O | 2011 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N <sub>2</sub> O | 2012 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N <sub>2</sub> O | 2013 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N <sub>2</sub> O | 2014 | 0.01 g / g | IPCC, 2006e |
| Volatilization rate                              | 1990 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                              | 1991 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                              | 1992 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                              | 1993 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                              | 1994 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                              | 1995 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                              | 1996 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                              | 1997 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                              | 1998 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                              | 1999 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                              | 2000 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                              | 2001 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                              | 2002 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                              | 2003 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                              | 2004 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                              | 2005 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                              | 2006 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                              | 2007 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                              | 2008 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                              | 2009 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                              | 2010 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                              | 2011 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                              | 2012 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                              | 2013 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                              | 2014 | 0.2 g / g  | IPCC, 2006e |

**Activity = Nitrogen applied in fertilizer - Synthetic fertilizers**

| - Variable Name -                                      | - Year - | - Value and Units - | - Reference -       |
|--|----------|---------------------|---------------------|
| Nitrogen applied in fertilizer - Synthetic fertilizers | 1990     | 563,165 ton         | CDFA, various years |
| Nitrogen applied in fertilizer - Synthetic fertilizers | 1991     | 456,222 ton         | CDFA, various years |

|  |      |             |                       |
|--|------|-------------|-----------------------|
| Nitrogen applied in fertilizer - Synthetic fertilizers | 1992 | 494,606 ton | CDFA, various years   |
| Nitrogen applied in fertilizer - Synthetic fertilizers | 1993 | 587,279 ton | CDFA, various years   |
| Nitrogen applied in fertilizer - Synthetic fertilizers | 1994 | 511,587 ton | CDFA, various years   |
| Nitrogen applied in fertilizer - Synthetic fertilizers | 1995 | 669,513 ton | CDFA, various years   |
| Nitrogen applied in fertilizer - Synthetic fertilizers | 1996 | 634,611 ton | CDFA, various years   |
| Nitrogen applied in fertilizer - Synthetic fertilizers | 1997 | 509,841 ton | CDFA, various years   |
| Nitrogen applied in fertilizer - Synthetic fertilizers | 1998 | 542,175 ton | CDFA, various years   |
| Nitrogen applied in fertilizer - Synthetic fertilizers | 1999 | 547,153 ton | CDFA, various years   |
| Nitrogen applied in fertilizer - Synthetic fertilizers | 2000 | 550,485 ton | Compilation, see text |
| Nitrogen applied in fertilizer - Synthetic fertilizers | 2001 | 542,705 ton | Compilation, see text |
| Nitrogen applied in fertilizer - Synthetic fertilizers | 2002 | 550,216 ton | Compilation, see text |
| Nitrogen applied in fertilizer - Synthetic fertilizers | 2003 | 537,947 ton | Compilation, see text |
| Nitrogen applied in fertilizer - Synthetic fertilizers | 2004 | 542,299 ton | Compilation, see text |
| Nitrogen applied in fertilizer - Synthetic fertilizers | 2005 | 532,743 ton | Compilation, see text |
| Nitrogen applied in fertilizer - Synthetic fertilizers | 2006 | 520,087 ton | Compilation, see text |
| Nitrogen applied in fertilizer - Synthetic fertilizers | 2007 | 536,113 ton | Compilation, see text |
| Nitrogen applied in fertilizer - Synthetic fertilizers | 2008 | 538,479 ton | Compilation, see text |
| Nitrogen applied in fertilizer - Synthetic fertilizers | 2009 | 513,379 ton | Compilation, see text |
| Nitrogen applied in fertilizer - Synthetic fertilizers | 2010 | 538,345 ton | Compilation, see text |
| Nitrogen applied in fertilizer - Synthetic fertilizers | 2011 | 569,673 ton | Compilation, see text |
| Nitrogen applied in fertilizer - Synthetic fertilizers | 2012 | 563,750 ton | Compilation, see text |
| Nitrogen applied in fertilizer - Synthetic fertilizers | 2013 | 539,403 ton | Compilation, see text |
| Nitrogen applied in fertilizer - Synthetic fertilizers | 2014 | 501,644 ton | Compilation, see text |
| Leached nitrogen emitted as N <sub>2</sub> O           | 1990 | 7.500E-03   | IPCC, 2006e           |
| Leached nitrogen emitted as N <sub>2</sub> O           | 1991 | 7.500E-03   | IPCC, 2006e           |
| Leached nitrogen emitted as N <sub>2</sub> O           | 1992 | 7.500E-03   | IPCC, 2006e           |
| Leached nitrogen emitted as N <sub>2</sub> O           | 1993 | 7.500E-03   | IPCC, 2006e           |
| Leached nitrogen emitted as N <sub>2</sub> O           | 1994 | 7.500E-03   | IPCC, 2006e           |
| Leached nitrogen emitted as N <sub>2</sub> O           | 1995 | 7.500E-03   | IPCC, 2006e           |
| Leached nitrogen emitted as N <sub>2</sub> O           | 1996 | 7.500E-03   | IPCC, 2006e           |
| Leached nitrogen emitted as N <sub>2</sub> O           | 1997 | 7.500E-03   | IPCC, 2006e           |
| Leached nitrogen emitted as N <sub>2</sub> O           | 1998 | 7.500E-03   | IPCC, 2006e           |
| Leached nitrogen emitted as N <sub>2</sub> O           | 1999 | 7.500E-03   | IPCC, 2006e           |
| Leached nitrogen emitted as N <sub>2</sub> O           | 2000 | 7.500E-03   | IPCC, 2006e           |
| Leached nitrogen emitted as N <sub>2</sub> O           | 2001 | 7.500E-03   | IPCC, 2006e           |
| Leached nitrogen emitted as N <sub>2</sub> O           | 2002 | 7.500E-03   | IPCC, 2006e           |
| Leached nitrogen emitted as N <sub>2</sub> O           | 2003 | 7.500E-03   | IPCC, 2006e           |
| Leached nitrogen emitted as N <sub>2</sub> O           | 2004 | 7.500E-03   | IPCC, 2006e           |
| Leached nitrogen emitted as N <sub>2</sub> O           | 2005 | 7.500E-03   | IPCC, 2006e           |
| Leached nitrogen emitted as N <sub>2</sub> O           | 2006 | 7.500E-03   | IPCC, 2006e           |
| Leached nitrogen emitted as N <sub>2</sub> O           | 2007 | 7.500E-03   | IPCC, 2006e           |
| Leached nitrogen emitted as N <sub>2</sub> O           | 2008 | 7.500E-03   | IPCC, 2006e           |
| Leached nitrogen emitted as N <sub>2</sub> O           | 2009 | 7.500E-03   | IPCC, 2006e           |
| Leached nitrogen emitted as N <sub>2</sub> O           | 2010 | 7.500E-03   | IPCC, 2006e           |
| Leached nitrogen emitted as N <sub>2</sub> O           | 2011 | 7.500E-03   | IPCC, 2006e           |
| Leached nitrogen emitted as N <sub>2</sub> O           | 2012 | 7.500E-03   | IPCC, 2006e           |
| Leached nitrogen emitted as N <sub>2</sub> O           | 2013 | 7.500E-03   | IPCC, 2006e           |
| Leached nitrogen emitted as N <sub>2</sub> O           | 2014 | 7.500E-03   | IPCC, 2006e           |
| Leaching rate  | 1990 | 0.3         | IPCC, 2006e           |
| Leaching rate  | 1991 | 0.3         | IPCC, 2006e           |
| Leaching rate  | 1992 | 0.3         | IPCC, 2006e           |
| Leaching rate  | 1993 | 0.3         | IPCC, 2006e           |
| Leaching rate  | 1994 | 0.3         | IPCC, 2006e           |
| Leaching rate  | 1995 | 0.3         | IPCC, 2006e           |
| Leaching rate  | 1996 | 0.3         | IPCC, 2006e           |
| Leaching rate  | 1997 | 0.3         | IPCC, 2006e           |



|               |      |     |             |
|---------------|------|-----|-------------|
| Leaching rate | 1998 | 0.3 | IPCC, 2006e |
| Leaching rate | 1999 | 0.3 | IPCC, 2006e |
| Leaching rate | 2000 | 0.3 | IPCC, 2006e |
| Leaching rate | 2001 | 0.3 | IPCC, 2006e |
| Leaching rate | 2002 | 0.3 | IPCC, 2006e |
| Leaching rate | 2003 | 0.3 | IPCC, 2006e |
| Leaching rate | 2004 | 0.3 | IPCC, 2006e |
| Leaching rate | 2005 | 0.3 | IPCC, 2006e |
| Leaching rate | 2006 | 0.3 | IPCC, 2006e |
| Leaching rate | 2007 | 0.3 | IPCC, 2006e |
| Leaching rate | 2008 | 0.3 | IPCC, 2006e |
| Leaching rate | 2009 | 0.3 | IPCC, 2006e |
| Leaching rate | 2010 | 0.3 | IPCC, 2006e |
| Leaching rate | 2011 | 0.3 | IPCC, 2006e |
| Leaching rate | 2012 | 0.3 | IPCC, 2006e |
| Leaching rate | 2013 | 0.3 | IPCC, 2006e |
| Leaching rate | 2014 | 0.3 | IPCC, 2006e |

|                         |      |            |             |
|-------------------------|------|------------|-------------|
| Nitrogen emitted as N2O | 1990 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O | 1991 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O | 1992 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O | 1993 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O | 1994 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O | 1995 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O | 1996 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O | 1997 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O | 1998 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O | 1999 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O | 2000 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O | 2001 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O | 2002 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O | 2003 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O | 2004 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O | 2005 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O | 2006 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O | 2007 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O | 2008 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O | 2009 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O | 2010 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O | 2011 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O | 2012 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O | 2013 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O | 2014 | 0.01 g / g | IPCC, 2006e |

|                                     |      |            |             |
|-------------------------------------|------|------------|-------------|
| Redeposited nitrogen emitted as N2O | 1990 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 1991 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 1992 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 1993 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 1994 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 1995 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 1996 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 1997 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 1998 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 1999 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 2000 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 2001 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 2002 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 2003 | 0.01 g / g | IPCC, 2006e |

|                                     |      |            |             |
|-------------------------------------|------|------------|-------------|
| Redeposited nitrogen emitted as N2O | 2004 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 2005 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 2006 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 2007 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 2008 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 2009 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 2010 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 2011 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 2012 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 2013 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 2014 | 0.01 g / g | IPCC, 2006e |
| Volatilization rate                 | 1990 | 0.1 g / g  | IPCC, 2006e |
| Volatilization rate                 | 1991 | 0.1 g / g  | IPCC, 2006e |
| Volatilization rate                 | 1992 | 0.1 g / g  | IPCC, 2006e |
| Volatilization rate                 | 1993 | 0.1 g / g  | IPCC, 2006e |
| Volatilization rate                 | 1994 | 0.1 g / g  | IPCC, 2006e |
| Volatilization rate                 | 1995 | 0.1 g / g  | IPCC, 2006e |
| Volatilization rate                 | 1996 | 0.1 g / g  | IPCC, 2006e |
| Volatilization rate                 | 1997 | 0.1 g / g  | IPCC, 2006e |
| Volatilization rate                 | 1998 | 0.1 g / g  | IPCC, 2006e |
| Volatilization rate                 | 1999 | 0.1 g / g  | IPCC, 2006e |
| Volatilization rate                 | 2000 | 0.1 g / g  | IPCC, 2006e |
| Volatilization rate                 | 2001 | 0.1 g / g  | IPCC, 2006e |
| Volatilization rate                 | 2002 | 0.1 g / g  | IPCC, 2006e |
| Volatilization rate                 | 2003 | 0.1 g / g  | IPCC, 2006e |
| Volatilization rate                 | 2004 | 0.1 g / g  | IPCC, 2006e |
| Volatilization rate                 | 2005 | 0.1 g / g  | IPCC, 2006e |
| Volatilization rate                 | 2006 | 0.1 g / g  | IPCC, 2006e |
| Volatilization rate                 | 2007 | 0.1 g / g  | IPCC, 2006e |
| Volatilization rate                 | 2008 | 0.1 g / g  | IPCC, 2006e |
| Volatilization rate                 | 2009 | 0.1 g / g  | IPCC, 2006e |
| Volatilization rate                 | 2010 | 0.1 g / g  | IPCC, 2006e |
| Volatilization rate                 | 2011 | 0.1 g / g  | IPCC, 2006e |
| Volatilization rate                 | 2012 | 0.1 g / g  | IPCC, 2006e |
| Volatilization rate                 | 2013 | 0.1 g / g  | IPCC, 2006e |
| Volatilization rate                 | 2014 | 0.1 g / g  | IPCC, 2006e |

**Activity = Nitrogen in managed manure - Beef cattle**

| - Variable Name -                        | - Year - | - Value and Units -        | - Reference -         |
|--|----------|----------------------------|-----------------------|
| Nitrogen in managed manure - Beef cattle | 1990     | 16.72 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in managed manure - Beef cattle | 1991     | 13.87 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in managed manure - Beef cattle | 1992     | 12.9 Gg (thousand tonnes)  | Compilation, see text |
| Nitrogen in managed manure - Beef cattle | 1993     | 13 Gg (thousand tonnes)    | Compilation, see text |
| Nitrogen in managed manure - Beef cattle | 1994     | 12.38 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in managed manure - Beef cattle | 1995     | 13.84 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in managed manure - Beef cattle | 1996     | 11.95 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in managed manure - Beef cattle | 1997     | 12.17 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in managed manure - Beef cattle | 1998     | 12.71 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in managed manure - Beef cattle | 1999     | 14.46 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in managed manure - Beef cattle | 2000     | 14.83 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in managed manure - Beef cattle | 2001     | 15.04 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in managed manure - Beef cattle | 2002     | 16.78 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in managed manure - Beef cattle | 2003     | 18.48 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in managed manure - Beef cattle | 2004     | 17.46 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in managed manure - Beef cattle | 2005     | 18.35 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in managed manure - Beef cattle | 2006     | 19.75 Gg (thousand tonnes) | Compilation, see text |

|  |      |                            |                       |
|--|------|----------------------------|-----------------------|
| Nitrogen in managed manure - Beef cattle     | 2007 | 19.33 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in managed manure - Beef cattle     | 2008 | 19.02 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in managed manure - Beef cattle     | 2009 | 17.96 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in managed manure - Beef cattle     | 2010 | 17.34 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in managed manure - Beef cattle     | 2011 | 17.36 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in managed manure - Beef cattle     | 2012 | 18.13 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in managed manure - Beef cattle     | 2013 | 18.18 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in managed manure - Beef cattle     | 2014 | 20.03 Gg (thousand tonnes) | Compilation, see text |
| Leached nitrogen emitted as N <sub>2</sub> O | 1990 | 7.500E-03                  | IPCC, 2006e           |
| Leached nitrogen emitted as N <sub>2</sub> O | 1991 | 7.500E-03                  | IPCC, 2006e           |
| Leached nitrogen emitted as N <sub>2</sub> O | 1992 | 7.500E-03                  | IPCC, 2006e           |
| Leached nitrogen emitted as N <sub>2</sub> O | 1993 | 7.500E-03                  | IPCC, 2006e           |
| Leached nitrogen emitted as N <sub>2</sub> O | 1994 | 7.500E-03                  | IPCC, 2006e           |
| Leached nitrogen emitted as N <sub>2</sub> O | 1995 | 7.500E-03                  | IPCC, 2006e           |
| Leached nitrogen emitted as N <sub>2</sub> O | 1996 | 7.500E-03                  | IPCC, 2006e           |
| Leached nitrogen emitted as N <sub>2</sub> O | 1997 | 7.500E-03                  | IPCC, 2006e           |
| Leached nitrogen emitted as N <sub>2</sub> O | 1998 | 7.500E-03                  | IPCC, 2006e           |
| Leached nitrogen emitted as N <sub>2</sub> O | 1999 | 7.500E-03                  | IPCC, 2006e           |
| Leached nitrogen emitted as N <sub>2</sub> O | 2000 | 7.500E-03                  | IPCC, 2006e           |
| Leached nitrogen emitted as N <sub>2</sub> O | 2001 | 7.500E-03                  | IPCC, 2006e           |
| Leached nitrogen emitted as N <sub>2</sub> O | 2002 | 7.500E-03                  | IPCC, 2006e           |
| Leached nitrogen emitted as N <sub>2</sub> O | 2003 | 7.500E-03                  | IPCC, 2006e           |
| Leached nitrogen emitted as N <sub>2</sub> O | 2004 | 7.500E-03                  | IPCC, 2006e           |
| Leached nitrogen emitted as N <sub>2</sub> O | 2005 | 7.500E-03                  | IPCC, 2006e           |
| Leached nitrogen emitted as N <sub>2</sub> O | 2006 | 7.500E-03                  | IPCC, 2006e           |
| Leached nitrogen emitted as N <sub>2</sub> O | 2007 | 7.500E-03                  | IPCC, 2006e           |
| Leached nitrogen emitted as N <sub>2</sub> O | 2008 | 7.500E-03                  | IPCC, 2006e           |
| Leached nitrogen emitted as N <sub>2</sub> O | 2009 | 7.500E-03                  | IPCC, 2006e           |
| Leached nitrogen emitted as N <sub>2</sub> O | 2010 | 7.500E-03                  | IPCC, 2006e           |
| Leached nitrogen emitted as N <sub>2</sub> O | 2011 | 7.500E-03                  | IPCC, 2006e           |
| Leached nitrogen emitted as N <sub>2</sub> O | 2012 | 7.500E-03                  | IPCC, 2006e           |
| Leached nitrogen emitted as N <sub>2</sub> O | 2013 | 7.500E-03                  | IPCC, 2006e           |
| Leached nitrogen emitted as N <sub>2</sub> O | 2014 | 7.500E-03                  | IPCC, 2006e           |
| Leaching rate                                | 1990 | 0.3                        | IPCC, 2006e           |
| Leaching rate                                | 1991 | 0.3                        | IPCC, 2006e           |
| Leaching rate                                | 1992 | 0.3                        | IPCC, 2006e           |
| Leaching rate                                | 1993 | 0.3                        | IPCC, 2006e           |
| Leaching rate                                | 1994 | 0.3                        | IPCC, 2006e           |
| Leaching rate                                | 1995 | 0.3                        | IPCC, 2006e           |
| Leaching rate                                | 1996 | 0.3                        | IPCC, 2006e           |
| Leaching rate                                | 1997 | 0.3                        | IPCC, 2006e           |
| Leaching rate                                | 1998 | 0.3                        | IPCC, 2006e           |
| Leaching rate                                | 1999 | 0.3                        | IPCC, 2006e           |
| Leaching rate                                | 2000 | 0.3                        | IPCC, 2006e           |
| Leaching rate                                | 2001 | 0.3                        | IPCC, 2006e           |
| Leaching rate                                | 2002 | 0.3                        | IPCC, 2006e           |
| Leaching rate                                | 2003 | 0.3                        | IPCC, 2006e           |
| Leaching rate                                | 2004 | 0.3                        | IPCC, 2006e           |
| Leaching rate                                | 2005 | 0.3                        | IPCC, 2006e           |
| Leaching rate                                | 2006 | 0.3                        | IPCC, 2006e           |
| Leaching rate                                | 2007 | 0.3                        | IPCC, 2006e           |
| Leaching rate                                | 2008 | 0.3                        | IPCC, 2006e           |
| Leaching rate                                | 2009 | 0.3                        | IPCC, 2006e           |
| Leaching rate                                | 2010 | 0.3                        | IPCC, 2006e           |
| Leaching rate                                | 2011 | 0.3                        | IPCC, 2006e           |
| Leaching rate                                | 2012 | 0.3                        | IPCC, 2006e           |

|  |      |            |             |
|--|------|------------|-------------|
| Leaching rate                                    | 2013 | 0.3        | IPCC, 2006e |
| Leaching rate                                    | 2014 | 0.3        | IPCC, 2006e |
| Nitrogen emitted as N <sub>2</sub> O             | 1990 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N <sub>2</sub> O             | 1991 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N <sub>2</sub> O             | 1992 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N <sub>2</sub> O             | 1993 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N <sub>2</sub> O             | 1994 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N <sub>2</sub> O             | 1995 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N <sub>2</sub> O             | 1996 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N <sub>2</sub> O             | 1997 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N <sub>2</sub> O             | 1998 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N <sub>2</sub> O             | 1999 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N <sub>2</sub> O             | 2000 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N <sub>2</sub> O             | 2001 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N <sub>2</sub> O             | 2002 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N <sub>2</sub> O             | 2003 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N <sub>2</sub> O             | 2004 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N <sub>2</sub> O             | 2005 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N <sub>2</sub> O             | 2006 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N <sub>2</sub> O             | 2007 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N <sub>2</sub> O             | 2008 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N <sub>2</sub> O             | 2009 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N <sub>2</sub> O             | 2010 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N <sub>2</sub> O             | 2011 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N <sub>2</sub> O             | 2012 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N <sub>2</sub> O             | 2013 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N <sub>2</sub> O             | 2014 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N <sub>2</sub> O | 1990 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N <sub>2</sub> O | 1991 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N <sub>2</sub> O | 1992 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N <sub>2</sub> O | 1993 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N <sub>2</sub> O | 1994 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N <sub>2</sub> O | 1995 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N <sub>2</sub> O | 1996 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N <sub>2</sub> O | 1997 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N <sub>2</sub> O | 1998 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N <sub>2</sub> O | 1999 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N <sub>2</sub> O | 2000 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N <sub>2</sub> O | 2001 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N <sub>2</sub> O | 2002 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N <sub>2</sub> O | 2003 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N <sub>2</sub> O | 2004 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N <sub>2</sub> O | 2005 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N <sub>2</sub> O | 2006 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N <sub>2</sub> O | 2007 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N <sub>2</sub> O | 2008 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N <sub>2</sub> O | 2009 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N <sub>2</sub> O | 2010 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N <sub>2</sub> O | 2011 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N <sub>2</sub> O | 2012 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N <sub>2</sub> O | 2013 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N <sub>2</sub> O | 2014 | 0.01 g / g | IPCC, 2006e |
| Volatilization rate                              | 1990 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                              | 1991 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                              | 1992 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                              | 1993 | 0.2 g / g  | IPCC, 2006e |

|                     |      |           |             |
|---------------------|------|-----------|-------------|
| Volatilization rate | 1994 | 0.2 g / g | IPCC, 2006e |
| Volatilization rate | 1995 | 0.2 g / g | IPCC, 2006e |
| Volatilization rate | 1996 | 0.2 g / g | IPCC, 2006e |
| Volatilization rate | 1997 | 0.2 g / g | IPCC, 2006e |
| Volatilization rate | 1998 | 0.2 g / g | IPCC, 2006e |
| Volatilization rate | 1999 | 0.2 g / g | IPCC, 2006e |
| Volatilization rate | 2000 | 0.2 g / g | IPCC, 2006e |
| Volatilization rate | 2001 | 0.2 g / g | IPCC, 2006e |
| Volatilization rate | 2002 | 0.2 g / g | IPCC, 2006e |
| Volatilization rate | 2003 | 0.2 g / g | IPCC, 2006e |
| Volatilization rate | 2004 | 0.2 g / g | IPCC, 2006e |
| Volatilization rate | 2005 | 0.2 g / g | IPCC, 2006e |
| Volatilization rate | 2006 | 0.2 g / g | IPCC, 2006e |
| Volatilization rate | 2007 | 0.2 g / g | IPCC, 2006e |
| Volatilization rate | 2008 | 0.2 g / g | IPCC, 2006e |
| Volatilization rate | 2009 | 0.2 g / g | IPCC, 2006e |
| Volatilization rate | 2010 | 0.2 g / g | IPCC, 2006e |
| Volatilization rate | 2011 | 0.2 g / g | IPCC, 2006e |
| Volatilization rate | 2012 | 0.2 g / g | IPCC, 2006e |
| Volatilization rate | 2013 | 0.2 g / g | IPCC, 2006e |
| Volatilization rate | 2014 | 0.2 g / g | IPCC, 2006e |

**Activity = Nitrogen in managed manure - Dairy cows**

| - Variable Name -                            | - Year - | - Value and Units -         | - Reference -         |
|--|----------|-----------------------------|-----------------------|
| Nitrogen in managed manure - Dairy cows      | 1990     | 98.1 Gg (thousand tonnes)   | Compilation, see text |
| Nitrogen in managed manure - Dairy cows      | 1991     | 101.37 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in managed manure - Dairy cows      | 1992     | 102.7 Gg (thousand tonnes)  | Compilation, see text |
| Nitrogen in managed manure - Dairy cows      | 1993     | 106.78 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in managed manure - Dairy cows      | 1994     | 112.73 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in managed manure - Dairy cows      | 1995     | 114.96 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in managed manure - Dairy cows      | 1996     | 118.6 Gg (thousand tonnes)  | Compilation, see text |
| Nitrogen in managed manure - Dairy cows      | 1997     | 126.16 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in managed manure - Dairy cows      | 1998     | 126.98 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in managed manure - Dairy cows      | 1999     | 128.35 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in managed manure - Dairy cows      | 2000     | 135.31 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in managed manure - Dairy cows      | 2001     | 136.75 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in managed manure - Dairy cows      | 2002     | 147.96 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in managed manure - Dairy cows      | 2003     | 150.83 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in managed manure - Dairy cows      | 2004     | 146.38 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in managed manure - Dairy cows      | 2005     | 149.98 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in managed manure - Dairy cows      | 2006     | 154.01 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in managed manure - Dairy cows      | 2007     | 160.98 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in managed manure - Dairy cows      | 2008     | 156.13 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in managed manure - Dairy cows      | 2009     | 152.33 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in managed manure - Dairy cows      | 2010     | 156.48 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in managed manure - Dairy cows      | 2011     | 155.95 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in managed manure - Dairy cows      | 2012     | 156.61 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in managed manure - Dairy cows      | 2013     | 151.79 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in managed manure - Dairy cows      | 2014     | 155.03 Gg (thousand tonnes) | Compilation, see text |
| Leached nitrogen emitted as N <sub>2</sub> O | 1990     | 7.500E-03                   | IPCC, 2006e           |
| Leached nitrogen emitted as N <sub>2</sub> O | 1991     | 7.500E-03                   | IPCC, 2006e           |
| Leached nitrogen emitted as N <sub>2</sub> O | 1992     | 7.500E-03                   | IPCC, 2006e           |
| Leached nitrogen emitted as N <sub>2</sub> O | 1993     | 7.500E-03                   | IPCC, 2006e           |
| Leached nitrogen emitted as N <sub>2</sub> O | 1994     | 7.500E-03                   | IPCC, 2006e           |
| Leached nitrogen emitted as N <sub>2</sub> O | 1995     | 7.500E-03                   | IPCC, 2006e           |
| Leached nitrogen emitted as N <sub>2</sub> O | 1996     | 7.500E-03                   | IPCC, 2006e           |



|                                 |      |            |             |
|---------------------------------|------|------------|-------------|
| Leached nitrogen emitted as N2O | 1997 | 7.500E-03  | IPCC, 2006e |
| Leached nitrogen emitted as N2O | 1998 | 7.500E-03  | IPCC, 2006e |
| Leached nitrogen emitted as N2O | 1999 | 7.500E-03  | IPCC, 2006e |
| Leached nitrogen emitted as N2O | 2000 | 7.500E-03  | IPCC, 2006e |
| Leached nitrogen emitted as N2O | 2001 | 7.500E-03  | IPCC, 2006e |
| Leached nitrogen emitted as N2O | 2002 | 7.500E-03  | IPCC, 2006e |
| Leached nitrogen emitted as N2O | 2003 | 7.500E-03  | IPCC, 2006e |
| Leached nitrogen emitted as N2O | 2004 | 7.500E-03  | IPCC, 2006e |
| Leached nitrogen emitted as N2O | 2005 | 7.500E-03  | IPCC, 2006e |
| Leached nitrogen emitted as N2O | 2006 | 7.500E-03  | IPCC, 2006e |
| Leached nitrogen emitted as N2O | 2007 | 7.500E-03  | IPCC, 2006e |
| Leached nitrogen emitted as N2O | 2008 | 7.500E-03  | IPCC, 2006e |
| Leached nitrogen emitted as N2O | 2009 | 7.500E-03  | IPCC, 2006e |
| Leached nitrogen emitted as N2O | 2010 | 7.500E-03  | IPCC, 2006e |
| Leached nitrogen emitted as N2O | 2011 | 7.500E-03  | IPCC, 2006e |
| Leached nitrogen emitted as N2O | 2012 | 7.500E-03  | IPCC, 2006e |
| Leached nitrogen emitted as N2O | 2013 | 7.500E-03  | IPCC, 2006e |
| Leached nitrogen emitted as N2O | 2014 | 7.500E-03  | IPCC, 2006e |
| Leaching rate                   | 1990 | 0.3        | IPCC, 2006e |
| Leaching rate                   | 1991 | 0.3        | IPCC, 2006e |
| Leaching rate                   | 1992 | 0.3        | IPCC, 2006e |
| Leaching rate                   | 1993 | 0.3        | IPCC, 2006e |
| Leaching rate                   | 1994 | 0.3        | IPCC, 2006e |
| Leaching rate                   | 1995 | 0.3        | IPCC, 2006e |
| Leaching rate                   | 1996 | 0.3        | IPCC, 2006e |
| Leaching rate                   | 1997 | 0.3        | IPCC, 2006e |
| Leaching rate                   | 1998 | 0.3        | IPCC, 2006e |
| Leaching rate                   | 1999 | 0.3        | IPCC, 2006e |
| Leaching rate                   | 2000 | 0.3        | IPCC, 2006e |
| Leaching rate                   | 2001 | 0.3        | IPCC, 2006e |
| Leaching rate                   | 2002 | 0.3        | IPCC, 2006e |
| Leaching rate                   | 2003 | 0.3        | IPCC, 2006e |
| Leaching rate                   | 2004 | 0.3        | IPCC, 2006e |
| Leaching rate                   | 2005 | 0.3        | IPCC, 2006e |
| Leaching rate                   | 2006 | 0.3        | IPCC, 2006e |
| Leaching rate                   | 2007 | 0.3        | IPCC, 2006e |
| Leaching rate                   | 2008 | 0.3        | IPCC, 2006e |
| Leaching rate                   | 2009 | 0.3        | IPCC, 2006e |
| Leaching rate                   | 2010 | 0.3        | IPCC, 2006e |
| Leaching rate                   | 2011 | 0.3        | IPCC, 2006e |
| Leaching rate                   | 2012 | 0.3        | IPCC, 2006e |
| Leaching rate                   | 2013 | 0.3        | IPCC, 2006e |
| Leaching rate                   | 2014 | 0.3        | IPCC, 2006e |
| Nitrogen emitted as N2O         | 1990 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O         | 1991 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O         | 1992 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O         | 1993 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O         | 1994 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O         | 1995 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O         | 1996 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O         | 1997 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O         | 1998 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O         | 1999 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O         | 2000 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O         | 2001 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O         | 2002 | 0.01 g / g | IPCC, 2006e |

|                                     |      |            |             |
|-------------------------------------|------|------------|-------------|
| Nitrogen emitted as N2O             | 2003 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O             | 2004 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O             | 2005 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O             | 2006 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O             | 2007 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O             | 2008 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O             | 2009 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O             | 2010 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O             | 2011 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O             | 2012 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O             | 2013 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O             | 2014 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 1990 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 1991 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 1992 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 1993 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 1994 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 1995 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 1996 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 1997 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 1998 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 1999 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 2000 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 2001 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 2002 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 2003 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 2004 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 2005 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 2006 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 2007 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 2008 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 2009 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 2010 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 2011 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 2012 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 2013 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 2014 | 0.01 g / g | IPCC, 2006e |
| Volatilization rate                 | 1990 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                 | 1991 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                 | 1992 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                 | 1993 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                 | 1994 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                 | 1995 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                 | 1996 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                 | 1997 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                 | 1998 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                 | 1999 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                 | 2000 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                 | 2001 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                 | 2002 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                 | 2003 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                 | 2004 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                 | 2005 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                 | 2006 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                 | 2007 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                 | 2008 | 0.2 g / g  | IPCC, 2006e |

|                     |      |           |             |
|---------------------|------|-----------|-------------|
| Volatilization rate | 2009 | 0.2 g / g | IPCC, 2006e |
| Volatilization rate | 2010 | 0.2 g / g | IPCC, 2006e |
| Volatilization rate | 2011 | 0.2 g / g | IPCC, 2006e |
| Volatilization rate | 2012 | 0.2 g / g | IPCC, 2006e |
| Volatilization rate | 2013 | 0.2 g / g | IPCC, 2006e |
| Volatilization rate | 2014 | 0.2 g / g | IPCC, 2006e |

**Activity = Nitrogen in managed manure - Dairy heifers**

| - Variable Name -                          | - Year - | - Value and Units -        | - Reference -         |
|--|----------|----------------------------|-----------------------|
| Nitrogen in managed manure - Dairy heifers | 1990     | 28.73 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in managed manure - Dairy heifers | 1991     | 27.85 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in managed manure - Dairy heifers | 1992     | 30.61 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in managed manure - Dairy heifers | 1993     | 30.84 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in managed manure - Dairy heifers | 1994     | 33.65 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in managed manure - Dairy heifers | 1995     | 34.85 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in managed manure - Dairy heifers | 1996     | 36.05 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in managed manure - Dairy heifers | 1997     | 36.59 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in managed manure - Dairy heifers | 1998     | 37.49 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in managed manure - Dairy heifers | 1999     | 38.3 Gg (thousand tonnes)  | Compilation, see text |
| Nitrogen in managed manure - Dairy heifers | 2000     | 38.66 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in managed manure - Dairy heifers | 2001     | 40.1 Gg (thousand tonnes)  | Compilation, see text |
| Nitrogen in managed manure - Dairy heifers | 2002     | 41.35 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in managed manure - Dairy heifers | 2003     | 42.06 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in managed manure - Dairy heifers | 2004     | 37.72 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in managed manure - Dairy heifers | 2005     | 39.49 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in managed manure - Dairy heifers | 2006     | 40.67 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in managed manure - Dairy heifers | 2007     | 40.38 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in managed manure - Dairy heifers | 2008     | 39.28 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in managed manure - Dairy heifers | 2009     | 38.58 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in managed manure - Dairy heifers | 2010     | 37.37 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in managed manure - Dairy heifers | 2011     | 37.41 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in managed manure - Dairy heifers | 2012     | 41.1 Gg (thousand tonnes)  | Compilation, see text |
| Nitrogen in managed manure - Dairy heifers | 2013     | 38.26 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in managed manure - Dairy heifers | 2014     | 36.9 Gg (thousand tonnes)  | Compilation, see text |
| Leached nitrogen emitted as N2O            | 1990     | 7.500E-03                  | IPCC, 2006e           |
| Leached nitrogen emitted as N2O            | 1991     | 7.500E-03                  | IPCC, 2006e           |
| Leached nitrogen emitted as N2O            | 1992     | 7.500E-03                  | IPCC, 2006e           |
| Leached nitrogen emitted as N2O            | 1993     | 7.500E-03                  | IPCC, 2006e           |
| Leached nitrogen emitted as N2O            | 1994     | 7.500E-03                  | IPCC, 2006e           |
| Leached nitrogen emitted as N2O            | 1995     | 7.500E-03                  | IPCC, 2006e           |
| Leached nitrogen emitted as N2O            | 1996     | 7.500E-03                  | IPCC, 2006e           |
| Leached nitrogen emitted as N2O            | 1997     | 7.500E-03                  | IPCC, 2006e           |
| Leached nitrogen emitted as N2O            | 1998     | 7.500E-03                  | IPCC, 2006e           |
| Leached nitrogen emitted as N2O            | 1999     | 7.500E-03                  | IPCC, 2006e           |
| Leached nitrogen emitted as N2O            | 2000     | 7.500E-03                  | IPCC, 2006e           |
| Leached nitrogen emitted as N2O            | 2001     | 7.500E-03                  | IPCC, 2006e           |
| Leached nitrogen emitted as N2O            | 2002     | 7.500E-03                  | IPCC, 2006e           |
| Leached nitrogen emitted as N2O            | 2003     | 7.500E-03                  | IPCC, 2006e           |
| Leached nitrogen emitted as N2O            | 2004     | 7.500E-03                  | IPCC, 2006e           |
| Leached nitrogen emitted as N2O            | 2005     | 7.500E-03                  | IPCC, 2006e           |
| Leached nitrogen emitted as N2O            | 2006     | 7.500E-03                  | IPCC, 2006e           |
| Leached nitrogen emitted as N2O            | 2007     | 7.500E-03                  | IPCC, 2006e           |
| Leached nitrogen emitted as N2O            | 2008     | 7.500E-03                  | IPCC, 2006e           |
| Leached nitrogen emitted as N2O            | 2009     | 7.500E-03                  | IPCC, 2006e           |
| Leached nitrogen emitted as N2O            | 2010     | 7.500E-03                  | IPCC, 2006e           |
| Leached nitrogen emitted as N2O            | 2011     | 7.500E-03                  | IPCC, 2006e           |

|  |      |            |             |
|--|------|------------|-------------|
| Leached nitrogen emitted as N <sub>2</sub> O     | 2012 | 7.500E-03  | IPCC, 2006e |
| Leached nitrogen emitted as N <sub>2</sub> O     | 2013 | 7.500E-03  | IPCC, 2006e |
| Leached nitrogen emitted as N <sub>2</sub> O     | 2014 | 7.500E-03  | IPCC, 2006e |
| Leaching rate                                    | 1990 | 0.3        | IPCC, 2006e |
| Leaching rate                                    | 1991 | 0.3        | IPCC, 2006e |
| Leaching rate                                    | 1992 | 0.3        | IPCC, 2006e |
| Leaching rate                                    | 1993 | 0.3        | IPCC, 2006e |
| Leaching rate                                    | 1994 | 0.3        | IPCC, 2006e |
| Leaching rate                                    | 1995 | 0.3        | IPCC, 2006e |
| Leaching rate                                    | 1996 | 0.3        | IPCC, 2006e |
| Leaching rate                                    | 1997 | 0.3        | IPCC, 2006e |
| Leaching rate                                    | 1998 | 0.3        | IPCC, 2006e |
| Leaching rate                                    | 1999 | 0.3        | IPCC, 2006e |
| Leaching rate                                    | 2000 | 0.3        | IPCC, 2006e |
| Leaching rate                                    | 2001 | 0.3        | IPCC, 2006e |
| Leaching rate                                    | 2002 | 0.3        | IPCC, 2006e |
| Leaching rate                                    | 2003 | 0.3        | IPCC, 2006e |
| Leaching rate                                    | 2004 | 0.3        | IPCC, 2006e |
| Leaching rate                                    | 2005 | 0.3        | IPCC, 2006e |
| Leaching rate                                    | 2006 | 0.3        | IPCC, 2006e |
| Leaching rate                                    | 2007 | 0.3        | IPCC, 2006e |
| Leaching rate                                    | 2008 | 0.3        | IPCC, 2006e |
| Leaching rate                                    | 2009 | 0.3        | IPCC, 2006e |
| Leaching rate                                    | 2010 | 0.3        | IPCC, 2006e |
| Leaching rate                                    | 2011 | 0.3        | IPCC, 2006e |
| Leaching rate                                    | 2012 | 0.3        | IPCC, 2006e |
| Leaching rate                                    | 2013 | 0.3        | IPCC, 2006e |
| Leaching rate                                    | 2014 | 0.3        | IPCC, 2006e |
| Nitrogen emitted as N <sub>2</sub> O             | 1990 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N <sub>2</sub> O             | 1991 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N <sub>2</sub> O             | 1992 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N <sub>2</sub> O             | 1993 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N <sub>2</sub> O             | 1994 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N <sub>2</sub> O             | 1995 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N <sub>2</sub> O             | 1996 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N <sub>2</sub> O             | 1997 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N <sub>2</sub> O             | 1998 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N <sub>2</sub> O             | 1999 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N <sub>2</sub> O             | 2000 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N <sub>2</sub> O             | 2001 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N <sub>2</sub> O             | 2002 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N <sub>2</sub> O             | 2003 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N <sub>2</sub> O             | 2004 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N <sub>2</sub> O             | 2005 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N <sub>2</sub> O             | 2006 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N <sub>2</sub> O             | 2007 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N <sub>2</sub> O             | 2008 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N <sub>2</sub> O             | 2009 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N <sub>2</sub> O             | 2010 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N <sub>2</sub> O             | 2011 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N <sub>2</sub> O             | 2012 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N <sub>2</sub> O             | 2013 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N <sub>2</sub> O             | 2014 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N <sub>2</sub> O | 1990 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N <sub>2</sub> O | 1991 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N <sub>2</sub> O | 1992 | 0.01 g / g | IPCC, 2006e |

|                                     |      |            |             |
|-------------------------------------|------|------------|-------------|
| Redeposited nitrogen emitted as N2O | 1993 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 1994 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 1995 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 1996 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 1997 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 1998 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 1999 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 2000 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 2001 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 2002 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 2003 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 2004 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 2005 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 2006 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 2007 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 2008 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 2009 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 2010 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 2011 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 2012 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 2013 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 2014 | 0.01 g / g | IPCC, 2006e |
| Volatilization rate                 | 1990 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                 | 1991 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                 | 1992 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                 | 1993 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                 | 1994 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                 | 1995 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                 | 1996 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                 | 1997 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                 | 1998 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                 | 1999 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                 | 2000 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                 | 2001 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                 | 2002 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                 | 2003 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                 | 2004 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                 | 2005 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                 | 2006 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                 | 2007 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                 | 2008 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                 | 2009 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                 | 2010 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                 | 2011 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                 | 2012 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                 | 2013 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                 | 2014 | 0.2 g / g  | IPCC, 2006e |

**Activity = Nitrogen in managed manure - Poultry**

| - Variable Name -                    | - Year - | - Value and Units -        | - Reference -         |
|--------------------------------------|----------|----------------------------|-----------------------|
| Nitrogen in managed manure - Poultry | 1990     | 41.27 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in managed manure - Poultry | 1991     | 39.39 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in managed manure - Poultry | 1992     | 36.49 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in managed manure - Poultry | 1993     | 32.32 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in managed manure - Poultry | 1994     | 31.62 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in managed manure - Poultry | 1995     | 31.55 Gg (thousand tonnes) | Compilation, see text |



|  |      |                            |                       |
|--|------|----------------------------|-----------------------|
| Nitrogen in managed manure - Poultry         | 1996 | 31.29 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in managed manure - Poultry         | 1997 | 30.36 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in managed manure - Poultry         | 1998 | 20.56 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in managed manure - Poultry         | 1999 | 19.93 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in managed manure - Poultry         | 2000 | 21.2 Gg (thousand tonnes)  | Compilation, see text |
| Nitrogen in managed manure - Poultry         | 2001 | 21.18 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in managed manure - Poultry         | 2002 | 20.62 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in managed manure - Poultry         | 2003 | 19.51 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in managed manure - Poultry         | 2004 | 17.85 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in managed manure - Poultry         | 2005 | 17.05 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in managed manure - Poultry         | 2006 | 17.67 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in managed manure - Poultry         | 2007 | 18.08 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in managed manure - Poultry         | 2008 | 17.33 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in managed manure - Poultry         | 2009 | 16.83 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in managed manure - Poultry         | 2010 | 17.03 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in managed manure - Poultry         | 2011 | 16.29 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in managed manure - Poultry         | 2012 | 16.07 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in managed manure - Poultry         | 2013 | 14.07 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in managed manure - Poultry         | 2014 | 12.26 Gg (thousand tonnes) | Compilation, see text |
| Leached nitrogen emitted as N <sub>2</sub> O | 1990 | 7.500E-03                  | IPCC, 2006e           |
| Leached nitrogen emitted as N <sub>2</sub> O | 1991 | 7.500E-03                  | IPCC, 2006e           |
| Leached nitrogen emitted as N <sub>2</sub> O | 1992 | 7.500E-03                  | IPCC, 2006e           |
| Leached nitrogen emitted as N <sub>2</sub> O | 1993 | 7.500E-03                  | IPCC, 2006e           |
| Leached nitrogen emitted as N <sub>2</sub> O | 1994 | 7.500E-03                  | IPCC, 2006e           |
| Leached nitrogen emitted as N <sub>2</sub> O | 1995 | 7.500E-03                  | IPCC, 2006e           |
| Leached nitrogen emitted as N <sub>2</sub> O | 1996 | 7.500E-03                  | IPCC, 2006e           |
| Leached nitrogen emitted as N <sub>2</sub> O | 1997 | 7.500E-03                  | IPCC, 2006e           |
| Leached nitrogen emitted as N <sub>2</sub> O | 1998 | 7.500E-03                  | IPCC, 2006e           |
| Leached nitrogen emitted as N <sub>2</sub> O | 1999 | 7.500E-03                  | IPCC, 2006e           |
| Leached nitrogen emitted as N <sub>2</sub> O | 2000 | 7.500E-03                  | IPCC, 2006e           |
| Leached nitrogen emitted as N <sub>2</sub> O | 2001 | 7.500E-03                  | IPCC, 2006e           |
| Leached nitrogen emitted as N <sub>2</sub> O | 2002 | 7.500E-03                  | IPCC, 2006e           |
| Leached nitrogen emitted as N <sub>2</sub> O | 2003 | 7.500E-03                  | IPCC, 2006e           |
| Leached nitrogen emitted as N <sub>2</sub> O | 2004 | 7.500E-03                  | IPCC, 2006e           |
| Leached nitrogen emitted as N <sub>2</sub> O | 2005 | 7.500E-03                  | IPCC, 2006e           |
| Leached nitrogen emitted as N <sub>2</sub> O | 2006 | 7.500E-03                  | IPCC, 2006e           |
| Leached nitrogen emitted as N <sub>2</sub> O | 2007 | 7.500E-03                  | IPCC, 2006e           |
| Leached nitrogen emitted as N <sub>2</sub> O | 2008 | 7.500E-03                  | IPCC, 2006e           |
| Leached nitrogen emitted as N <sub>2</sub> O | 2009 | 7.500E-03                  | IPCC, 2006e           |
| Leached nitrogen emitted as N <sub>2</sub> O | 2010 | 7.500E-03                  | IPCC, 2006e           |
| Leached nitrogen emitted as N <sub>2</sub> O | 2011 | 7.500E-03                  | IPCC, 2006e           |
| Leached nitrogen emitted as N <sub>2</sub> O | 2012 | 7.500E-03                  | IPCC, 2006e           |
| Leached nitrogen emitted as N <sub>2</sub> O | 2013 | 7.500E-03                  | IPCC, 2006e           |
| Leached nitrogen emitted as N <sub>2</sub> O | 2014 | 7.500E-03                  | IPCC, 2006e           |
| Leaching rate                                | 1990 | 0.3                        | IPCC, 2006e           |
| Leaching rate                                | 1991 | 0.3                        | IPCC, 2006e           |
| Leaching rate                                | 1992 | 0.3                        | IPCC, 2006e           |
| Leaching rate                                | 1993 | 0.3                        | IPCC, 2006e           |
| Leaching rate                                | 1994 | 0.3                        | IPCC, 2006e           |
| Leaching rate                                | 1995 | 0.3                        | IPCC, 2006e           |
| Leaching rate                                | 1996 | 0.3                        | IPCC, 2006e           |
| Leaching rate                                | 1997 | 0.3                        | IPCC, 2006e           |
| Leaching rate                                | 1998 | 0.3                        | IPCC, 2006e           |
| Leaching rate                                | 1999 | 0.3                        | IPCC, 2006e           |
| Leaching rate                                | 2000 | 0.3                        | IPCC, 2006e           |
| Leaching rate                                | 2001 | 0.3                        | IPCC, 2006e           |

|               |      |     |             |
|---------------|------|-----|-------------|
| Leaching rate | 2002 | 0.3 | IPCC, 2006e |
| Leaching rate | 2003 | 0.3 | IPCC, 2006e |
| Leaching rate | 2004 | 0.3 | IPCC, 2006e |
| Leaching rate | 2005 | 0.3 | IPCC, 2006e |
| Leaching rate | 2006 | 0.3 | IPCC, 2006e |
| Leaching rate | 2007 | 0.3 | IPCC, 2006e |
| Leaching rate | 2008 | 0.3 | IPCC, 2006e |
| Leaching rate | 2009 | 0.3 | IPCC, 2006e |
| Leaching rate | 2010 | 0.3 | IPCC, 2006e |
| Leaching rate | 2011 | 0.3 | IPCC, 2006e |
| Leaching rate | 2012 | 0.3 | IPCC, 2006e |
| Leaching rate | 2013 | 0.3 | IPCC, 2006e |
| Leaching rate | 2014 | 0.3 | IPCC, 2006e |

|                         |      |            |             |
|-------------------------|------|------------|-------------|
| Nitrogen emitted as N2O | 1990 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O | 1991 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O | 1992 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O | 1993 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O | 1994 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O | 1995 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O | 1996 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O | 1997 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O | 1998 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O | 1999 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O | 2000 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O | 2001 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O | 2002 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O | 2003 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O | 2004 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O | 2005 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O | 2006 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O | 2007 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O | 2008 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O | 2009 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O | 2010 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O | 2011 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O | 2012 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O | 2013 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O | 2014 | 0.01 g / g | IPCC, 2006e |

|                                     |      |            |             |
|-------------------------------------|------|------------|-------------|
| Redeposited nitrogen emitted as N2O | 1990 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 1991 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 1992 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 1993 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 1994 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 1995 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 1996 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 1997 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 1998 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 1999 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 2000 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 2001 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 2002 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 2003 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 2004 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 2005 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 2006 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 2007 | 0.01 g / g | IPCC, 2006e |

|                                     |      |            |             |
|-------------------------------------|------|------------|-------------|
| Redeposited nitrogen emitted as N2O | 2008 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 2009 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 2010 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 2011 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 2012 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 2013 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 2014 | 0.01 g / g | IPCC, 2006e |
| Volatilization rate                 | 1990 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                 | 1991 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                 | 1992 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                 | 1993 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                 | 1994 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                 | 1995 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                 | 1996 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                 | 1997 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                 | 1998 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                 | 1999 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                 | 2000 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                 | 2001 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                 | 2002 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                 | 2003 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                 | 2004 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                 | 2005 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                 | 2006 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                 | 2007 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                 | 2008 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                 | 2009 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                 | 2010 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                 | 2011 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                 | 2012 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                 | 2013 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                 | 2014 | 0.2 g / g  | IPCC, 2006e |

**Activity = Nitrogen in managed manure - Sheep, goat, horse**

| - Variable Name -                               | - Year - | - Value and Units -       | - Reference -         |
|---|----------|---------------------------|-----------------------|
| Nitrogen in managed manure - Sheep, goat, horse | 1990     | 1.36 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in managed manure - Sheep, goat, horse | 1991     | 1.37 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in managed manure - Sheep, goat, horse | 1992     | 1.38 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in managed manure - Sheep, goat, horse | 1993     | 1.38 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in managed manure - Sheep, goat, horse | 1994     | 1.7 Gg (thousand tonnes)  | Compilation, see text |
| Nitrogen in managed manure - Sheep, goat, horse | 1995     | 1.98 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in managed manure - Sheep, goat, horse | 1996     | 2.18 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in managed manure - Sheep, goat, horse | 1997     | 2.41 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in managed manure - Sheep, goat, horse | 1998     | 2.56 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in managed manure - Sheep, goat, horse | 1999     | 2.82 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in managed manure - Sheep, goat, horse | 2000     | 3.03 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in managed manure - Sheep, goat, horse | 2001     | 3.31 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in managed manure - Sheep, goat, horse | 2002     | 3.3 Gg (thousand tonnes)  | Compilation, see text |
| Nitrogen in managed manure - Sheep, goat, horse | 2003     | 3.46 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in managed manure - Sheep, goat, horse | 2004     | 3.54 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in managed manure - Sheep, goat, horse | 2005     | 3.82 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in managed manure - Sheep, goat, horse | 2006     | 3.76 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in managed manure - Sheep, goat, horse | 2007     | 3.63 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in managed manure - Sheep, goat, horse | 2008     | 3.62 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in managed manure - Sheep, goat, horse | 2009     | 3.79 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in managed manure - Sheep, goat, horse | 2010     | 3.71 Gg (thousand tonnes) | Compilation, see text |

|   |      |                           |                       |
|---|------|---------------------------|-----------------------|
| Nitrogen in managed manure - Sheep, goat, horse | 2011 | 3.71 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in managed manure - Sheep, goat, horse | 2012 | 3.69 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in managed manure - Sheep, goat, horse | 2013 | 3.64 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in managed manure - Sheep, goat, horse | 2014 | 3.69 Gg (thousand tonnes) | Compilation, see text |
| Leached nitrogen emitted as N <sub>2</sub> O    | 1990 | 7.500E-03                 | IPCC, 2006e           |
| Leached nitrogen emitted as N <sub>2</sub> O    | 1991 | 7.500E-03                 | IPCC, 2006e           |
| Leached nitrogen emitted as N <sub>2</sub> O    | 1992 | 7.500E-03                 | IPCC, 2006e           |
| Leached nitrogen emitted as N <sub>2</sub> O    | 1993 | 7.500E-03                 | IPCC, 2006e           |
| Leached nitrogen emitted as N <sub>2</sub> O    | 1994 | 7.500E-03                 | IPCC, 2006e           |
| Leached nitrogen emitted as N <sub>2</sub> O    | 1995 | 7.500E-03                 | IPCC, 2006e           |
| Leached nitrogen emitted as N <sub>2</sub> O    | 1996 | 7.500E-03                 | IPCC, 2006e           |
| Leached nitrogen emitted as N <sub>2</sub> O    | 1997 | 7.500E-03                 | IPCC, 2006e           |
| Leached nitrogen emitted as N <sub>2</sub> O    | 1998 | 7.500E-03                 | IPCC, 2006e           |
| Leached nitrogen emitted as N <sub>2</sub> O    | 1999 | 7.500E-03                 | IPCC, 2006e           |
| Leached nitrogen emitted as N <sub>2</sub> O    | 2000 | 7.500E-03                 | IPCC, 2006e           |
| Leached nitrogen emitted as N <sub>2</sub> O    | 2001 | 7.500E-03                 | IPCC, 2006e           |
| Leached nitrogen emitted as N <sub>2</sub> O    | 2002 | 7.500E-03                 | IPCC, 2006e           |
| Leached nitrogen emitted as N <sub>2</sub> O    | 2003 | 7.500E-03                 | IPCC, 2006e           |
| Leached nitrogen emitted as N <sub>2</sub> O    | 2004 | 7.500E-03                 | IPCC, 2006e           |
| Leached nitrogen emitted as N <sub>2</sub> O    | 2005 | 7.500E-03                 | IPCC, 2006e           |
| Leached nitrogen emitted as N <sub>2</sub> O    | 2006 | 7.500E-03                 | IPCC, 2006e           |
| Leached nitrogen emitted as N <sub>2</sub> O    | 2007 | 7.500E-03                 | IPCC, 2006e           |
| Leached nitrogen emitted as N <sub>2</sub> O    | 2008 | 7.500E-03                 | IPCC, 2006e           |
| Leached nitrogen emitted as N <sub>2</sub> O    | 2009 | 7.500E-03                 | IPCC, 2006e           |
| Leached nitrogen emitted as N <sub>2</sub> O    | 2010 | 7.500E-03                 | IPCC, 2006e           |
| Leached nitrogen emitted as N <sub>2</sub> O    | 2011 | 7.500E-03                 | IPCC, 2006e           |
| Leached nitrogen emitted as N <sub>2</sub> O    | 2012 | 7.500E-03                 | IPCC, 2006e           |
| Leached nitrogen emitted as N <sub>2</sub> O    | 2013 | 7.500E-03                 | IPCC, 2006e           |
| Leached nitrogen emitted as N <sub>2</sub> O    | 2014 | 7.500E-03                 | IPCC, 2006e           |
| Leaching rate                                   | 1990 | 0.3                       | IPCC, 2006e           |
| Leaching rate                                   | 1991 | 0.3                       | IPCC, 2006e           |
| Leaching rate                                   | 1992 | 0.3                       | IPCC, 2006e           |
| Leaching rate                                   | 1993 | 0.3                       | IPCC, 2006e           |
| Leaching rate                                   | 1994 | 0.3                       | IPCC, 2006e           |
| Leaching rate                                   | 1995 | 0.3                       | IPCC, 2006e           |
| Leaching rate                                   | 1996 | 0.3                       | IPCC, 2006e           |
| Leaching rate                                   | 1997 | 0.3                       | IPCC, 2006e           |
| Leaching rate                                   | 1998 | 0.3                       | IPCC, 2006e           |
| Leaching rate                                   | 1999 | 0.3                       | IPCC, 2006e           |
| Leaching rate                                   | 2000 | 0.3                       | IPCC, 2006e           |
| Leaching rate                                   | 2001 | 0.3                       | IPCC, 2006e           |
| Leaching rate                                   | 2002 | 0.3                       | IPCC, 2006e           |
| Leaching rate                                   | 2003 | 0.3                       | IPCC, 2006e           |
| Leaching rate                                   | 2004 | 0.3                       | IPCC, 2006e           |
| Leaching rate                                   | 2005 | 0.3                       | IPCC, 2006e           |
| Leaching rate                                   | 2006 | 0.3                       | IPCC, 2006e           |
| Leaching rate                                   | 2007 | 0.3                       | IPCC, 2006e           |
| Leaching rate                                   | 2008 | 0.3                       | IPCC, 2006e           |
| Leaching rate                                   | 2009 | 0.3                       | IPCC, 2006e           |
| Leaching rate                                   | 2010 | 0.3                       | IPCC, 2006e           |
| Leaching rate                                   | 2011 | 0.3                       | IPCC, 2006e           |
| Leaching rate                                   | 2012 | 0.3                       | IPCC, 2006e           |
| Leaching rate                                   | 2013 | 0.3                       | IPCC, 2006e           |
| Leaching rate                                   | 2014 | 0.3                       | IPCC, 2006e           |
| Nitrogen emitted as N <sub>2</sub> O            | 1990 | 0.01 g / g                | IPCC, 2006e           |
| Nitrogen emitted as N <sub>2</sub> O            | 1991 | 0.01 g / g                | IPCC, 2006e           |

|                                     |      |            |             |
|-------------------------------------|------|------------|-------------|
| Nitrogen emitted as N2O             | 1992 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O             | 1993 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O             | 1994 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O             | 1995 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O             | 1996 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O             | 1997 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O             | 1998 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O             | 1999 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O             | 2000 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O             | 2001 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O             | 2002 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O             | 2003 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O             | 2004 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O             | 2005 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O             | 2006 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O             | 2007 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O             | 2008 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O             | 2009 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O             | 2010 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O             | 2011 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O             | 2012 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O             | 2013 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O             | 2014 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 1990 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 1991 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 1992 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 1993 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 1994 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 1995 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 1996 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 1997 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 1998 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 1999 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 2000 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 2001 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 2002 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 2003 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 2004 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 2005 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 2006 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 2007 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 2008 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 2009 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 2010 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 2011 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 2012 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 2013 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 2014 | 0.01 g / g | IPCC, 2006e |
| Volatilization rate                 | 1990 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                 | 1991 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                 | 1992 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                 | 1993 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                 | 1994 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                 | 1995 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                 | 1996 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                 | 1997 | 0.2 g / g  | IPCC, 2006e |

|                     |      |           |             |
|---------------------|------|-----------|-------------|
| Volatilization rate | 1998 | 0.2 g / g | IPCC, 2006e |
| Volatilization rate | 1999 | 0.2 g / g | IPCC, 2006e |
| Volatilization rate | 2000 | 0.2 g / g | IPCC, 2006e |
| Volatilization rate | 2001 | 0.2 g / g | IPCC, 2006e |
| Volatilization rate | 2002 | 0.2 g / g | IPCC, 2006e |
| Volatilization rate | 2003 | 0.2 g / g | IPCC, 2006e |
| Volatilization rate | 2004 | 0.2 g / g | IPCC, 2006e |
| Volatilization rate | 2005 | 0.2 g / g | IPCC, 2006e |
| Volatilization rate | 2006 | 0.2 g / g | IPCC, 2006e |
| Volatilization rate | 2007 | 0.2 g / g | IPCC, 2006e |
| Volatilization rate | 2008 | 0.2 g / g | IPCC, 2006e |
| Volatilization rate | 2009 | 0.2 g / g | IPCC, 2006e |
| Volatilization rate | 2010 | 0.2 g / g | IPCC, 2006e |
| Volatilization rate | 2011 | 0.2 g / g | IPCC, 2006e |
| Volatilization rate | 2012 | 0.2 g / g | IPCC, 2006e |
| Volatilization rate | 2013 | 0.2 g / g | IPCC, 2006e |
| Volatilization rate | 2014 | 0.2 g / g | IPCC, 2006e |

**Activity = Nitrogen in managed manure - Swine**

| - Variable Name -                  | - Year - | - Value and Units -       | - Reference -         |
|------------------------------------|----------|---------------------------|-----------------------|
| Nitrogen in managed manure - Swine | 1990     | 757.55 Mg (tonnes)        | Compilation, see text |
| Nitrogen in managed manure - Swine | 1991     | 845.25 Mg (tonnes)        | Compilation, see text |
| Nitrogen in managed manure - Swine | 1992     | 1.05 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in managed manure - Swine | 1993     | 1.05 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in managed manure - Swine | 1994     | 1.03 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in managed manure - Swine | 1995     | 987.46 Mg (tonnes)        | Compilation, see text |
| Nitrogen in managed manure - Swine | 1996     | 864.36 Mg (tonnes)        | Compilation, see text |
| Nitrogen in managed manure - Swine | 1997     | 882.06 Mg (tonnes)        | Compilation, see text |
| Nitrogen in managed manure - Swine | 1998     | 824.61 Mg (tonnes)        | Compilation, see text |
| Nitrogen in managed manure - Swine | 1999     | 781.17 Mg (tonnes)        | Compilation, see text |
| Nitrogen in managed manure - Swine | 2000     | 639.2 Mg (tonnes)         | Compilation, see text |
| Nitrogen in managed manure - Swine | 2001     | 475.38 Mg (tonnes)        | Compilation, see text |
| Nitrogen in managed manure - Swine | 2002     | 683.29 Mg (tonnes)        | Compilation, see text |
| Nitrogen in managed manure - Swine | 2003     | 640.43 Mg (tonnes)        | Compilation, see text |
| Nitrogen in managed manure - Swine | 2004     | 682.36 Mg (tonnes)        | Compilation, see text |
| Nitrogen in managed manure - Swine | 2005     | 675.76 Mg (tonnes)        | Compilation, see text |
| Nitrogen in managed manure - Swine | 2006     | 676.32 Mg (tonnes)        | Compilation, see text |
| Nitrogen in managed manure - Swine | 2007     | 765.1 Mg (tonnes)         | Compilation, see text |
| Nitrogen in managed manure - Swine | 2008     | 386.5 Mg (tonnes)         | Compilation, see text |
| Nitrogen in managed manure - Swine | 2009     | 537.25 Mg (tonnes)        | Compilation, see text |
| Nitrogen in managed manure - Swine | 2010     | 507.69 Mg (tonnes)        | Compilation, see text |
| Nitrogen in managed manure - Swine | 2011     | 536.09 Mg (tonnes)        | Compilation, see text |
| Nitrogen in managed manure - Swine | 2012     | 527.59 Mg (tonnes)        | Compilation, see text |
| Nitrogen in managed manure - Swine | 2013     | 487.04 Mg (tonnes)        | Compilation, see text |
| Nitrogen in managed manure - Swine | 2014     | 540.51 Mg (tonnes)        | Compilation, see text |
| Leached nitrogen emitted as N2O    | 1990     | 7.500E-03                 | IPCC, 2006e           |
| Leached nitrogen emitted as N2O    | 1991     | 7.500E-03                 | IPCC, 2006e           |
| Leached nitrogen emitted as N2O    | 1992     | 7.500E-03                 | IPCC, 2006e           |
| Leached nitrogen emitted as N2O    | 1993     | 7.500E-03                 | IPCC, 2006e           |
| Leached nitrogen emitted as N2O    | 1994     | 7.500E-03                 | IPCC, 2006e           |
| Leached nitrogen emitted as N2O    | 1995     | 7.500E-03                 | IPCC, 2006e           |
| Leached nitrogen emitted as N2O    | 1996     | 7.500E-03                 | IPCC, 2006e           |
| Leached nitrogen emitted as N2O    | 1997     | 7.500E-03                 | IPCC, 2006e           |
| Leached nitrogen emitted as N2O    | 1998     | 7.500E-03                 | IPCC, 2006e           |
| Leached nitrogen emitted as N2O    | 1999     | 7.500E-03                 | IPCC, 2006e           |
| Leached nitrogen emitted as N2O    | 2000     | 7.500E-03                 | IPCC, 2006e           |



|                                 |      |           |             |
|---------------------------------|------|-----------|-------------|
| Leached nitrogen emitted as N2O | 2001 | 7.500E-03 | IPCC, 2006e |
| Leached nitrogen emitted as N2O | 2002 | 7.500E-03 | IPCC, 2006e |
| Leached nitrogen emitted as N2O | 2003 | 7.500E-03 | IPCC, 2006e |
| Leached nitrogen emitted as N2O | 2004 | 7.500E-03 | IPCC, 2006e |
| Leached nitrogen emitted as N2O | 2005 | 7.500E-03 | IPCC, 2006e |
| Leached nitrogen emitted as N2O | 2006 | 7.500E-03 | IPCC, 2006e |
| Leached nitrogen emitted as N2O | 2007 | 7.500E-03 | IPCC, 2006e |
| Leached nitrogen emitted as N2O | 2008 | 7.500E-03 | IPCC, 2006e |
| Leached nitrogen emitted as N2O | 2009 | 7.500E-03 | IPCC, 2006e |
| Leached nitrogen emitted as N2O | 2010 | 7.500E-03 | IPCC, 2006e |
| Leached nitrogen emitted as N2O | 2011 | 7.500E-03 | IPCC, 2006e |
| Leached nitrogen emitted as N2O | 2012 | 7.500E-03 | IPCC, 2006e |
| Leached nitrogen emitted as N2O | 2013 | 7.500E-03 | IPCC, 2006e |
| Leached nitrogen emitted as N2O | 2014 | 7.500E-03 | IPCC, 2006e |

|               |      |     |             |
|---------------|------|-----|-------------|
| Leaching rate | 1990 | 0.3 | IPCC, 2006e |
| Leaching rate | 1991 | 0.3 | IPCC, 2006e |
| Leaching rate | 1992 | 0.3 | IPCC, 2006e |
| Leaching rate | 1993 | 0.3 | IPCC, 2006e |
| Leaching rate | 1994 | 0.3 | IPCC, 2006e |
| Leaching rate | 1995 | 0.3 | IPCC, 2006e |
| Leaching rate | 1996 | 0.3 | IPCC, 2006e |
| Leaching rate | 1997 | 0.3 | IPCC, 2006e |
| Leaching rate | 1998 | 0.3 | IPCC, 2006e |
| Leaching rate | 1999 | 0.3 | IPCC, 2006e |
| Leaching rate | 2000 | 0.3 | IPCC, 2006e |
| Leaching rate | 2001 | 0.3 | IPCC, 2006e |
| Leaching rate | 2002 | 0.3 | IPCC, 2006e |
| Leaching rate | 2003 | 0.3 | IPCC, 2006e |
| Leaching rate | 2004 | 0.3 | IPCC, 2006e |
| Leaching rate | 2005 | 0.3 | IPCC, 2006e |
| Leaching rate | 2006 | 0.3 | IPCC, 2006e |
| Leaching rate | 2007 | 0.3 | IPCC, 2006e |
| Leaching rate | 2008 | 0.3 | IPCC, 2006e |
| Leaching rate | 2009 | 0.3 | IPCC, 2006e |
| Leaching rate | 2010 | 0.3 | IPCC, 2006e |
| Leaching rate | 2011 | 0.3 | IPCC, 2006e |
| Leaching rate | 2012 | 0.3 | IPCC, 2006e |
| Leaching rate | 2013 | 0.3 | IPCC, 2006e |
| Leaching rate | 2014 | 0.3 | IPCC, 2006e |

|                         |      |            |             |
|-------------------------|------|------------|-------------|
| Nitrogen emitted as N2O | 1990 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O | 1991 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O | 1992 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O | 1993 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O | 1994 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O | 1995 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O | 1996 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O | 1997 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O | 1998 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O | 1999 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O | 2000 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O | 2001 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O | 2002 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O | 2003 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O | 2004 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O | 2005 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O | 2006 | 0.01 g / g | IPCC, 2006e |

|                                     |      |            |             |
|-------------------------------------|------|------------|-------------|
| Nitrogen emitted as N2O             | 2007 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O             | 2008 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O             | 2009 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O             | 2010 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O             | 2011 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O             | 2012 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O             | 2013 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O             | 2014 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 1990 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 1991 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 1992 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 1993 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 1994 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 1995 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 1996 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 1997 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 1998 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 1999 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 2000 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 2001 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 2002 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 2003 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 2004 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 2005 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 2006 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 2007 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 2008 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 2009 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 2010 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 2011 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 2012 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 2013 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 2014 | 0.01 g / g | IPCC, 2006e |
| Volatilization rate                 | 1990 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                 | 1991 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                 | 1992 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                 | 1993 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                 | 1994 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                 | 1995 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                 | 1996 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                 | 1997 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                 | 1998 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                 | 1999 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                 | 2000 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                 | 2001 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                 | 2002 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                 | 2003 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                 | 2004 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                 | 2005 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                 | 2006 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                 | 2007 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                 | 2008 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                 | 2009 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                 | 2010 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                 | 2011 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                 | 2012 | 0.2 g / g  | IPCC, 2006e |

|                     |      |           |             |
|---------------------|------|-----------|-------------|
| Volatilization rate | 2013 | 0.2 g / g | IPCC, 2006e |
| Volatilization rate | 2014 | 0.2 g / g | IPCC, 2006e |

**Activity = Nitrogen in unmanaged manure - Beef cattle**

| - Variable Name -                          | - Year - | - Value and Units -         | - Reference -         |
|--|----------|-----------------------------|-----------------------|
| Nitrogen in unmanaged manure - Beef cattle | 1990     | 119.1 Gg (thousand tonnes)  | Compilation, see text |
| Nitrogen in unmanaged manure - Beef cattle | 1991     | 110.74 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in unmanaged manure - Beef cattle | 1992     | 112.75 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in unmanaged manure - Beef cattle | 1993     | 111.44 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in unmanaged manure - Beef cattle | 1994     | 112.27 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in unmanaged manure - Beef cattle | 1995     | 113.52 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in unmanaged manure - Beef cattle | 1996     | 110.95 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in unmanaged manure - Beef cattle | 1997     | 109.61 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in unmanaged manure - Beef cattle | 1998     | 109.31 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in unmanaged manure - Beef cattle | 1999     | 109.93 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in unmanaged manure - Beef cattle | 2000     | 106.34 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in unmanaged manure - Beef cattle | 2001     | 105.36 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in unmanaged manure - Beef cattle | 2002     | 104.73 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in unmanaged manure - Beef cattle | 2003     | 103.51 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in unmanaged manure - Beef cattle | 2004     | 103.3 Gg (thousand tonnes)  | Compilation, see text |
| Nitrogen in unmanaged manure - Beef cattle | 2005     | 106.31 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in unmanaged manure - Beef cattle | 2006     | 102.96 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in unmanaged manure - Beef cattle | 2007     | 88.26 Gg (thousand tonnes)  | Compilation, see text |
| Nitrogen in unmanaged manure - Beef cattle | 2008     | 85.21 Gg (thousand tonnes)  | Compilation, see text |
| Nitrogen in unmanaged manure - Beef cattle | 2009     | 85.08 Gg (thousand tonnes)  | Compilation, see text |
| Nitrogen in unmanaged manure - Beef cattle | 2010     | 84.08 Gg (thousand tonnes)  | Compilation, see text |
| Nitrogen in unmanaged manure - Beef cattle | 2011     | 81.65 Gg (thousand tonnes)  | Compilation, see text |
| Nitrogen in unmanaged manure - Beef cattle | 2012     | 83.11 Gg (thousand tonnes)  | Compilation, see text |
| Nitrogen in unmanaged manure - Beef cattle | 2013     | 81.91 Gg (thousand tonnes)  | Compilation, see text |
| Nitrogen in unmanaged manure - Beef cattle | 2014     | 81.92 Gg (thousand tonnes)  | Compilation, see text |
| Leached nitrogen emitted as N2O            | 1990     | 7.500E-03                   | IPCC, 2006e           |
| Leached nitrogen emitted as N2O            | 1991     | 7.500E-03                   | IPCC, 2006e           |
| Leached nitrogen emitted as N2O            | 1992     | 7.500E-03                   | IPCC, 2006e           |
| Leached nitrogen emitted as N2O            | 1993     | 7.500E-03                   | IPCC, 2006e           |
| Leached nitrogen emitted as N2O            | 1994     | 7.500E-03                   | IPCC, 2006e           |
| Leached nitrogen emitted as N2O            | 1995     | 7.500E-03                   | IPCC, 2006e           |
| Leached nitrogen emitted as N2O            | 1996     | 7.500E-03                   | IPCC, 2006e           |
| Leached nitrogen emitted as N2O            | 1997     | 7.500E-03                   | IPCC, 2006e           |
| Leached nitrogen emitted as N2O            | 1998     | 7.500E-03                   | IPCC, 2006e           |
| Leached nitrogen emitted as N2O            | 1999     | 7.500E-03                   | IPCC, 2006e           |
| Leached nitrogen emitted as N2O            | 2000     | 7.500E-03                   | IPCC, 2006e           |
| Leached nitrogen emitted as N2O            | 2001     | 7.500E-03                   | IPCC, 2006e           |
| Leached nitrogen emitted as N2O            | 2002     | 7.500E-03                   | IPCC, 2006e           |
| Leached nitrogen emitted as N2O            | 2003     | 7.500E-03                   | IPCC, 2006e           |
| Leached nitrogen emitted as N2O            | 2004     | 7.500E-03                   | IPCC, 2006e           |
| Leached nitrogen emitted as N2O            | 2005     | 7.500E-03                   | IPCC, 2006e           |
| Leached nitrogen emitted as N2O            | 2006     | 7.500E-03                   | IPCC, 2006e           |
| Leached nitrogen emitted as N2O            | 2007     | 7.500E-03                   | IPCC, 2006e           |
| Leached nitrogen emitted as N2O            | 2008     | 7.500E-03                   | IPCC, 2006e           |
| Leached nitrogen emitted as N2O            | 2009     | 7.500E-03                   | IPCC, 2006e           |
| Leached nitrogen emitted as N2O            | 2010     | 7.500E-03                   | IPCC, 2006e           |
| Leached nitrogen emitted as N2O            | 2011     | 7.500E-03                   | IPCC, 2006e           |
| Leached nitrogen emitted as N2O            | 2012     | 7.500E-03                   | IPCC, 2006e           |
| Leached nitrogen emitted as N2O            | 2013     | 7.500E-03                   | IPCC, 2006e           |
| Leached nitrogen emitted as N2O            | 2014     | 7.500E-03                   | IPCC, 2006e           |
| Leaching rate                              | 1990     | 0.3                         | IPCC, 2006e           |

|  |      |            |             |
|--|------|------------|-------------|
| Leaching rate                                    | 1991 | 0.3        | IPCC, 2006e |
| Leaching rate                                    | 1992 | 0.3        | IPCC, 2006e |
| Leaching rate                                    | 1993 | 0.3        | IPCC, 2006e |
| Leaching rate                                    | 1994 | 0.3        | IPCC, 2006e |
| Leaching rate                                    | 1995 | 0.3        | IPCC, 2006e |
| Leaching rate                                    | 1996 | 0.3        | IPCC, 2006e |
| Leaching rate                                    | 1997 | 0.3        | IPCC, 2006e |
| Leaching rate                                    | 1998 | 0.3        | IPCC, 2006e |
| Leaching rate                                    | 1999 | 0.3        | IPCC, 2006e |
| Leaching rate                                    | 2000 | 0.3        | IPCC, 2006e |
| Leaching rate                                    | 2001 | 0.3        | IPCC, 2006e |
| Leaching rate                                    | 2002 | 0.3        | IPCC, 2006e |
| Leaching rate                                    | 2003 | 0.3        | IPCC, 2006e |
| Leaching rate                                    | 2004 | 0.3        | IPCC, 2006e |
| Leaching rate                                    | 2005 | 0.3        | IPCC, 2006e |
| Leaching rate                                    | 2006 | 0.3        | IPCC, 2006e |
| Leaching rate                                    | 2007 | 0.3        | IPCC, 2006e |
| Leaching rate                                    | 2008 | 0.3        | IPCC, 2006e |
| Leaching rate                                    | 2009 | 0.3        | IPCC, 2006e |
| Leaching rate                                    | 2010 | 0.3        | IPCC, 2006e |
| Leaching rate                                    | 2011 | 0.3        | IPCC, 2006e |
| Leaching rate                                    | 2012 | 0.3        | IPCC, 2006e |
| Leaching rate                                    | 2013 | 0.3        | IPCC, 2006e |
| Leaching rate                                    | 2014 | 0.3        | IPCC, 2006e |
| Nitrogen emitted as N <sub>2</sub> O             | 1990 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N <sub>2</sub> O             | 1991 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N <sub>2</sub> O             | 1992 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N <sub>2</sub> O             | 1993 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N <sub>2</sub> O             | 1994 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N <sub>2</sub> O             | 1995 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N <sub>2</sub> O             | 1996 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N <sub>2</sub> O             | 1997 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N <sub>2</sub> O             | 1998 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N <sub>2</sub> O             | 1999 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N <sub>2</sub> O             | 2000 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N <sub>2</sub> O             | 2001 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N <sub>2</sub> O             | 2002 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N <sub>2</sub> O             | 2003 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N <sub>2</sub> O             | 2004 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N <sub>2</sub> O             | 2005 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N <sub>2</sub> O             | 2006 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N <sub>2</sub> O             | 2007 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N <sub>2</sub> O             | 2008 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N <sub>2</sub> O             | 2009 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N <sub>2</sub> O             | 2010 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N <sub>2</sub> O             | 2011 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N <sub>2</sub> O             | 2012 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N <sub>2</sub> O             | 2013 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N <sub>2</sub> O             | 2014 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N <sub>2</sub> O | 1990 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N <sub>2</sub> O | 1991 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N <sub>2</sub> O | 1992 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N <sub>2</sub> O | 1993 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N <sub>2</sub> O | 1994 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N <sub>2</sub> O | 1995 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N <sub>2</sub> O | 1996 | 0.01 g / g | IPCC, 2006e |

|  |      |            |             |
|--|------|------------|-------------|
| Redeposited nitrogen emitted as N <sub>2</sub> O | 1997 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N <sub>2</sub> O | 1998 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N <sub>2</sub> O | 1999 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N <sub>2</sub> O | 2000 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N <sub>2</sub> O | 2001 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N <sub>2</sub> O | 2002 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N <sub>2</sub> O | 2003 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N <sub>2</sub> O | 2004 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N <sub>2</sub> O | 2005 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N <sub>2</sub> O | 2006 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N <sub>2</sub> O | 2007 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N <sub>2</sub> O | 2008 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N <sub>2</sub> O | 2009 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N <sub>2</sub> O | 2010 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N <sub>2</sub> O | 2011 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N <sub>2</sub> O | 2012 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N <sub>2</sub> O | 2013 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N <sub>2</sub> O | 2014 | 0.01 g / g | IPCC, 2006e |
| Volatilization rate                              | 1990 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                              | 1991 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                              | 1992 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                              | 1993 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                              | 1994 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                              | 1995 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                              | 1996 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                              | 1997 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                              | 1998 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                              | 1999 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                              | 2000 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                              | 2001 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                              | 2002 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                              | 2003 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                              | 2004 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                              | 2005 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                              | 2006 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                              | 2007 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                              | 2008 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                              | 2009 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                              | 2010 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                              | 2011 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                              | 2012 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                              | 2013 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                              | 2014 | 0.2 g / g  | IPCC, 2006e |

**Activity = Nitrogen in unmanaged manure - Dairy cows**

| - Variable Name -                         | - Year - | - Value and Units -        | - Reference -         |
|---|----------|----------------------------|-----------------------|
| Nitrogen in unmanaged manure - Dairy cows | 1990     | 22.71 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in unmanaged manure - Dairy cows | 1991     | 23.47 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in unmanaged manure - Dairy cows | 1992     | 23.78 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in unmanaged manure - Dairy cows | 1993     | 24.13 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in unmanaged manure - Dairy cows | 1994     | 24.86 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in unmanaged manure - Dairy cows | 1995     | 24.72 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in unmanaged manure - Dairy cows | 1996     | 24.86 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in unmanaged manure - Dairy cows | 1997     | 25.76 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in unmanaged manure - Dairy cows | 1998     | 25.69 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in unmanaged manure - Dairy cows | 1999     | 25.74 Gg (thousand tonnes) | Compilation, see text |

|  |      |                            |                       |
|--|------|----------------------------|-----------------------|
| Nitrogen in unmanaged manure - Dairy cows    | 2000 | 26.89 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in unmanaged manure - Dairy cows    | 2001 | 26.95 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in unmanaged manure - Dairy cows    | 2002 | 28.93 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in unmanaged manure - Dairy cows    | 2003 | 29.22 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in unmanaged manure - Dairy cows    | 2004 | 28.09 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in unmanaged manure - Dairy cows    | 2005 | 28.52 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in unmanaged manure - Dairy cows    | 2006 | 28.9 Gg (thousand tonnes)  | Compilation, see text |
| Nitrogen in unmanaged manure - Dairy cows    | 2007 | 29.96 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in unmanaged manure - Dairy cows    | 2008 | 29.05 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in unmanaged manure - Dairy cows    | 2009 | 28.3 Gg (thousand tonnes)  | Compilation, see text |
| Nitrogen in unmanaged manure - Dairy cows    | 2010 | 29.07 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in unmanaged manure - Dairy cows    | 2011 | 28.98 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in unmanaged manure - Dairy cows    | 2012 | 29.1 Gg (thousand tonnes)  | Compilation, see text |
| Nitrogen in unmanaged manure - Dairy cows    | 2013 | 28.2 Gg (thousand tonnes)  | Compilation, see text |
| Nitrogen in unmanaged manure - Dairy cows    | 2014 | 28.8 Gg (thousand tonnes)  | Compilation, see text |
| Leached nitrogen emitted as N <sub>2</sub> O | 1990 | 7.500E-03                  | IPCC, 2006e           |
| Leached nitrogen emitted as N <sub>2</sub> O | 1991 | 7.500E-03                  | IPCC, 2006e           |
| Leached nitrogen emitted as N <sub>2</sub> O | 1992 | 7.500E-03                  | IPCC, 2006e           |
| Leached nitrogen emitted as N <sub>2</sub> O | 1993 | 7.500E-03                  | IPCC, 2006e           |
| Leached nitrogen emitted as N <sub>2</sub> O | 1994 | 7.500E-03                  | IPCC, 2006e           |
| Leached nitrogen emitted as N <sub>2</sub> O | 1995 | 7.500E-03                  | IPCC, 2006e           |
| Leached nitrogen emitted as N <sub>2</sub> O | 1996 | 7.500E-03                  | IPCC, 2006e           |
| Leached nitrogen emitted as N <sub>2</sub> O | 1997 | 7.500E-03                  | IPCC, 2006e           |
| Leached nitrogen emitted as N <sub>2</sub> O | 1998 | 7.500E-03                  | IPCC, 2006e           |
| Leached nitrogen emitted as N <sub>2</sub> O | 1999 | 7.500E-03                  | IPCC, 2006e           |
| Leached nitrogen emitted as N <sub>2</sub> O | 2000 | 7.500E-03                  | IPCC, 2006e           |
| Leached nitrogen emitted as N <sub>2</sub> O | 2001 | 7.500E-03                  | IPCC, 2006e           |
| Leached nitrogen emitted as N <sub>2</sub> O | 2002 | 7.500E-03                  | IPCC, 2006e           |
| Leached nitrogen emitted as N <sub>2</sub> O | 2003 | 7.500E-03                  | IPCC, 2006e           |
| Leached nitrogen emitted as N <sub>2</sub> O | 2004 | 7.500E-03                  | IPCC, 2006e           |
| Leached nitrogen emitted as N <sub>2</sub> O | 2005 | 7.500E-03                  | IPCC, 2006e           |
| Leached nitrogen emitted as N <sub>2</sub> O | 2006 | 7.500E-03                  | IPCC, 2006e           |
| Leached nitrogen emitted as N <sub>2</sub> O | 2007 | 7.500E-03                  | IPCC, 2006e           |
| Leached nitrogen emitted as N <sub>2</sub> O | 2008 | 7.500E-03                  | IPCC, 2006e           |
| Leached nitrogen emitted as N <sub>2</sub> O | 2009 | 7.500E-03                  | IPCC, 2006e           |
| Leached nitrogen emitted as N <sub>2</sub> O | 2010 | 7.500E-03                  | IPCC, 2006e           |
| Leached nitrogen emitted as N <sub>2</sub> O | 2011 | 7.500E-03                  | IPCC, 2006e           |
| Leached nitrogen emitted as N <sub>2</sub> O | 2012 | 7.500E-03                  | IPCC, 2006e           |
| Leached nitrogen emitted as N <sub>2</sub> O | 2013 | 7.500E-03                  | IPCC, 2006e           |
| Leached nitrogen emitted as N <sub>2</sub> O | 2014 | 7.500E-03                  | IPCC, 2006e           |
| Leaching rate                                | 1990 | 0.3                        | IPCC, 2006e           |
| Leaching rate                                | 1991 | 0.3                        | IPCC, 2006e           |
| Leaching rate                                | 1992 | 0.3                        | IPCC, 2006e           |
| Leaching rate                                | 1993 | 0.3                        | IPCC, 2006e           |
| Leaching rate                                | 1994 | 0.3                        | IPCC, 2006e           |
| Leaching rate                                | 1995 | 0.3                        | IPCC, 2006e           |
| Leaching rate                                | 1996 | 0.3                        | IPCC, 2006e           |
| Leaching rate                                | 1997 | 0.3                        | IPCC, 2006e           |
| Leaching rate                                | 1998 | 0.3                        | IPCC, 2006e           |
| Leaching rate                                | 1999 | 0.3                        | IPCC, 2006e           |
| Leaching rate                                | 2000 | 0.3                        | IPCC, 2006e           |
| Leaching rate                                | 2001 | 0.3                        | IPCC, 2006e           |
| Leaching rate                                | 2002 | 0.3                        | IPCC, 2006e           |
| Leaching rate                                | 2003 | 0.3                        | IPCC, 2006e           |
| Leaching rate                                | 2004 | 0.3                        | IPCC, 2006e           |
| Leaching rate                                | 2005 | 0.3                        | IPCC, 2006e           |



|  |      |            |             |
|--|------|------------|-------------|
| Leaching rate                                    | 2006 | 0.3        | IPCC, 2006e |
| Leaching rate                                    | 2007 | 0.3        | IPCC, 2006e |
| Leaching rate                                    | 2008 | 0.3        | IPCC, 2006e |
| Leaching rate                                    | 2009 | 0.3        | IPCC, 2006e |
| Leaching rate                                    | 2010 | 0.3        | IPCC, 2006e |
| Leaching rate                                    | 2011 | 0.3        | IPCC, 2006e |
| Leaching rate                                    | 2012 | 0.3        | IPCC, 2006e |
| Leaching rate                                    | 2013 | 0.3        | IPCC, 2006e |
| Leaching rate                                    | 2014 | 0.3        | IPCC, 2006e |
| Nitrogen emitted as N <sub>2</sub> O             | 1990 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N <sub>2</sub> O             | 1991 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N <sub>2</sub> O             | 1992 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N <sub>2</sub> O             | 1993 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N <sub>2</sub> O             | 1994 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N <sub>2</sub> O             | 1995 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N <sub>2</sub> O             | 1996 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N <sub>2</sub> O             | 1997 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N <sub>2</sub> O             | 1998 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N <sub>2</sub> O             | 1999 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N <sub>2</sub> O             | 2000 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N <sub>2</sub> O             | 2001 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N <sub>2</sub> O             | 2002 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N <sub>2</sub> O             | 2003 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N <sub>2</sub> O             | 2004 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N <sub>2</sub> O             | 2005 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N <sub>2</sub> O             | 2006 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N <sub>2</sub> O             | 2007 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N <sub>2</sub> O             | 2008 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N <sub>2</sub> O             | 2009 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N <sub>2</sub> O             | 2010 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N <sub>2</sub> O             | 2011 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N <sub>2</sub> O             | 2012 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N <sub>2</sub> O             | 2013 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N <sub>2</sub> O             | 2014 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N <sub>2</sub> O | 1990 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N <sub>2</sub> O | 1991 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N <sub>2</sub> O | 1992 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N <sub>2</sub> O | 1993 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N <sub>2</sub> O | 1994 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N <sub>2</sub> O | 1995 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N <sub>2</sub> O | 1996 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N <sub>2</sub> O | 1997 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N <sub>2</sub> O | 1998 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N <sub>2</sub> O | 1999 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N <sub>2</sub> O | 2000 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N <sub>2</sub> O | 2001 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N <sub>2</sub> O | 2002 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N <sub>2</sub> O | 2003 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N <sub>2</sub> O | 2004 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N <sub>2</sub> O | 2005 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N <sub>2</sub> O | 2006 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N <sub>2</sub> O | 2007 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N <sub>2</sub> O | 2008 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N <sub>2</sub> O | 2009 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N <sub>2</sub> O | 2010 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N <sub>2</sub> O | 2011 | 0.01 g / g | IPCC, 2006e |

|  |      |            |             |
|--|------|------------|-------------|
| Redeposited nitrogen emitted as N <sub>2</sub> O | 2012 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N <sub>2</sub> O | 2013 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N <sub>2</sub> O | 2014 | 0.01 g / g | IPCC, 2006e |
| Volatilization rate                              | 1990 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                              | 1991 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                              | 1992 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                              | 1993 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                              | 1994 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                              | 1995 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                              | 1996 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                              | 1997 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                              | 1998 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                              | 1999 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                              | 2000 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                              | 2001 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                              | 2002 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                              | 2003 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                              | 2004 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                              | 2005 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                              | 2006 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                              | 2007 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                              | 2008 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                              | 2009 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                              | 2010 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                              | 2011 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                              | 2012 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                              | 2013 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                              | 2014 | 0.2 g / g  | IPCC, 2006e |

**Activity = Nitrogen in unmanaged manure - Dairy heifers**

| - Variable Name -                            | - Year - | - Value and Units -       | - Reference -         |
|--|----------|---------------------------|-----------------------|
| Nitrogen in unmanaged manure - Dairy heifers | 1990     | 5.12 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in unmanaged manure - Dairy heifers | 1991     | 4.96 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in unmanaged manure - Dairy heifers | 1992     | 5.46 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in unmanaged manure - Dairy heifers | 1993     | 5.36 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in unmanaged manure - Dairy heifers | 1994     | 5.7 Gg (thousand tonnes)  | Compilation, see text |
| Nitrogen in unmanaged manure - Dairy heifers | 1995     | 5.75 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in unmanaged manure - Dairy heifers | 1996     | 5.79 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in unmanaged manure - Dairy heifers | 1997     | 5.72 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in unmanaged manure - Dairy heifers | 1998     | 5.8 Gg (thousand tonnes)  | Compilation, see text |
| Nitrogen in unmanaged manure - Dairy heifers | 1999     | 5.87 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in unmanaged manure - Dairy heifers | 2000     | 5.87 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in unmanaged manure - Dairy heifers | 2001     | 6.03 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in unmanaged manure - Dairy heifers | 2002     | 6.16 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in unmanaged manure - Dairy heifers | 2003     | 6.27 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in unmanaged manure - Dairy heifers | 2004     | 5.62 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in unmanaged manure - Dairy heifers | 2005     | 5.89 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in unmanaged manure - Dairy heifers | 2006     | 6.06 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in unmanaged manure - Dairy heifers | 2007     | 6.02 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in unmanaged manure - Dairy heifers | 2008     | 5.86 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in unmanaged manure - Dairy heifers | 2009     | 5.75 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in unmanaged manure - Dairy heifers | 2010     | 5.57 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in unmanaged manure - Dairy heifers | 2011     | 5.58 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in unmanaged manure - Dairy heifers | 2012     | 6.13 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in unmanaged manure - Dairy heifers | 2013     | 5.7 Gg (thousand tonnes)  | Compilation, see text |
| Nitrogen in unmanaged manure - Dairy heifers | 2014     | 5.5 Gg (thousand tonnes)  | Compilation, see text |

|                                 |      |            |             |
|---------------------------------|------|------------|-------------|
| Leached nitrogen emitted as N2O | 1990 | 7.500E-03  | IPCC, 2006e |
| Leached nitrogen emitted as N2O | 1991 | 7.500E-03  | IPCC, 2006e |
| Leached nitrogen emitted as N2O | 1992 | 7.500E-03  | IPCC, 2006e |
| Leached nitrogen emitted as N2O | 1993 | 7.500E-03  | IPCC, 2006e |
| Leached nitrogen emitted as N2O | 1994 | 7.500E-03  | IPCC, 2006e |
| Leached nitrogen emitted as N2O | 1995 | 7.500E-03  | IPCC, 2006e |
| Leached nitrogen emitted as N2O | 1996 | 7.500E-03  | IPCC, 2006e |
| Leached nitrogen emitted as N2O | 1997 | 7.500E-03  | IPCC, 2006e |
| Leached nitrogen emitted as N2O | 1998 | 7.500E-03  | IPCC, 2006e |
| Leached nitrogen emitted as N2O | 1999 | 7.500E-03  | IPCC, 2006e |
| Leached nitrogen emitted as N2O | 2000 | 7.500E-03  | IPCC, 2006e |
| Leached nitrogen emitted as N2O | 2001 | 7.500E-03  | IPCC, 2006e |
| Leached nitrogen emitted as N2O | 2002 | 7.500E-03  | IPCC, 2006e |
| Leached nitrogen emitted as N2O | 2003 | 7.500E-03  | IPCC, 2006e |
| Leached nitrogen emitted as N2O | 2004 | 7.500E-03  | IPCC, 2006e |
| Leached nitrogen emitted as N2O | 2005 | 7.500E-03  | IPCC, 2006e |
| Leached nitrogen emitted as N2O | 2006 | 7.500E-03  | IPCC, 2006e |
| Leached nitrogen emitted as N2O | 2007 | 7.500E-03  | IPCC, 2006e |
| Leached nitrogen emitted as N2O | 2008 | 7.500E-03  | IPCC, 2006e |
| Leached nitrogen emitted as N2O | 2009 | 7.500E-03  | IPCC, 2006e |
| Leached nitrogen emitted as N2O | 2010 | 7.500E-03  | IPCC, 2006e |
| Leached nitrogen emitted as N2O | 2011 | 7.500E-03  | IPCC, 2006e |
| Leached nitrogen emitted as N2O | 2012 | 7.500E-03  | IPCC, 2006e |
| Leached nitrogen emitted as N2O | 2013 | 7.500E-03  | IPCC, 2006e |
| Leached nitrogen emitted as N2O | 2014 | 7.500E-03  | IPCC, 2006e |
| Leaching rate                   | 1990 | 0.3        | IPCC, 2006e |
| Leaching rate                   | 1991 | 0.3        | IPCC, 2006e |
| Leaching rate                   | 1992 | 0.3        | IPCC, 2006e |
| Leaching rate                   | 1993 | 0.3        | IPCC, 2006e |
| Leaching rate                   | 1994 | 0.3        | IPCC, 2006e |
| Leaching rate                   | 1995 | 0.3        | IPCC, 2006e |
| Leaching rate                   | 1996 | 0.3        | IPCC, 2006e |
| Leaching rate                   | 1997 | 0.3        | IPCC, 2006e |
| Leaching rate                   | 1998 | 0.3        | IPCC, 2006e |
| Leaching rate                   | 1999 | 0.3        | IPCC, 2006e |
| Leaching rate                   | 2000 | 0.3        | IPCC, 2006e |
| Leaching rate                   | 2001 | 0.3        | IPCC, 2006e |
| Leaching rate                   | 2002 | 0.3        | IPCC, 2006e |
| Leaching rate                   | 2003 | 0.3        | IPCC, 2006e |
| Leaching rate                   | 2004 | 0.3        | IPCC, 2006e |
| Leaching rate                   | 2005 | 0.3        | IPCC, 2006e |
| Leaching rate                   | 2006 | 0.3        | IPCC, 2006e |
| Leaching rate                   | 2007 | 0.3        | IPCC, 2006e |
| Leaching rate                   | 2008 | 0.3        | IPCC, 2006e |
| Leaching rate                   | 2009 | 0.3        | IPCC, 2006e |
| Leaching rate                   | 2010 | 0.3        | IPCC, 2006e |
| Leaching rate                   | 2011 | 0.3        | IPCC, 2006e |
| Leaching rate                   | 2012 | 0.3        | IPCC, 2006e |
| Leaching rate                   | 2013 | 0.3        | IPCC, 2006e |
| Leaching rate                   | 2014 | 0.3        | IPCC, 2006e |
| Nitrogen emitted as N2O         | 1990 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O         | 1991 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O         | 1992 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O         | 1993 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O         | 1994 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O         | 1995 | 0.01 g / g | IPCC, 2006e |

|  |      |            |             |
|--|------|------------|-------------|
| Nitrogen emitted as N <sub>2</sub> O             | 1996 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N <sub>2</sub> O             | 1997 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N <sub>2</sub> O             | 1998 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N <sub>2</sub> O             | 1999 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N <sub>2</sub> O             | 2000 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N <sub>2</sub> O             | 2001 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N <sub>2</sub> O             | 2002 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N <sub>2</sub> O             | 2003 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N <sub>2</sub> O             | 2004 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N <sub>2</sub> O             | 2005 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N <sub>2</sub> O             | 2006 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N <sub>2</sub> O             | 2007 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N <sub>2</sub> O             | 2008 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N <sub>2</sub> O             | 2009 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N <sub>2</sub> O             | 2010 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N <sub>2</sub> O             | 2011 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N <sub>2</sub> O             | 2012 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N <sub>2</sub> O             | 2013 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N <sub>2</sub> O             | 2014 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N <sub>2</sub> O | 1990 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N <sub>2</sub> O | 1991 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N <sub>2</sub> O | 1992 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N <sub>2</sub> O | 1993 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N <sub>2</sub> O | 1994 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N <sub>2</sub> O | 1995 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N <sub>2</sub> O | 1996 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N <sub>2</sub> O | 1997 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N <sub>2</sub> O | 1998 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N <sub>2</sub> O | 1999 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N <sub>2</sub> O | 2000 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N <sub>2</sub> O | 2001 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N <sub>2</sub> O | 2002 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N <sub>2</sub> O | 2003 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N <sub>2</sub> O | 2004 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N <sub>2</sub> O | 2005 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N <sub>2</sub> O | 2006 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N <sub>2</sub> O | 2007 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N <sub>2</sub> O | 2008 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N <sub>2</sub> O | 2009 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N <sub>2</sub> O | 2010 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N <sub>2</sub> O | 2011 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N <sub>2</sub> O | 2012 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N <sub>2</sub> O | 2013 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N <sub>2</sub> O | 2014 | 0.01 g / g | IPCC, 2006e |
| Volatilization rate                              | 1990 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                              | 1991 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                              | 1992 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                              | 1993 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                              | 1994 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                              | 1995 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                              | 1996 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                              | 1997 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                              | 1998 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                              | 1999 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                              | 2000 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                              | 2001 | 0.2 g / g  | IPCC, 2006e |

|                     |      |           |             |
|---------------------|------|-----------|-------------|
| Volatilization rate | 2002 | 0.2 g / g | IPCC, 2006e |
| Volatilization rate | 2003 | 0.2 g / g | IPCC, 2006e |
| Volatilization rate | 2004 | 0.2 g / g | IPCC, 2006e |
| Volatilization rate | 2005 | 0.2 g / g | IPCC, 2006e |
| Volatilization rate | 2006 | 0.2 g / g | IPCC, 2006e |
| Volatilization rate | 2007 | 0.2 g / g | IPCC, 2006e |
| Volatilization rate | 2008 | 0.2 g / g | IPCC, 2006e |
| Volatilization rate | 2009 | 0.2 g / g | IPCC, 2006e |
| Volatilization rate | 2010 | 0.2 g / g | IPCC, 2006e |
| Volatilization rate | 2011 | 0.2 g / g | IPCC, 2006e |
| Volatilization rate | 2012 | 0.2 g / g | IPCC, 2006e |
| Volatilization rate | 2013 | 0.2 g / g | IPCC, 2006e |
| Volatilization rate | 2014 | 0.2 g / g | IPCC, 2006e |

**Activity = Nitrogen in unmanaged manure - Poultry**

| - Variable Name -                      | - Year - | - Value and Units - | - Reference -         |
|--|----------|---------------------|-----------------------|
| Nitrogen in unmanaged manure - Poultry | 1990     | 393.17 Mg (tonnes)  | Compilation, see text |
| Nitrogen in unmanaged manure - Poultry | 1991     | 374 Mg (tonnes)     | Compilation, see text |
| Nitrogen in unmanaged manure - Poultry | 1992     | 346.17 Mg (tonnes)  | Compilation, see text |
| Nitrogen in unmanaged manure - Poultry | 1993     | 301.06 Mg (tonnes)  | Compilation, see text |
| Nitrogen in unmanaged manure - Poultry | 1994     | 293.45 Mg (tonnes)  | Compilation, see text |
| Nitrogen in unmanaged manure - Poultry | 1995     | 302.96 Mg (tonnes)  | Compilation, see text |
| Nitrogen in unmanaged manure - Poultry | 1996     | 301.67 Mg (tonnes)  | Compilation, see text |
| Nitrogen in unmanaged manure - Poultry | 1997     | 287.25 Mg (tonnes)  | Compilation, see text |
| Nitrogen in unmanaged manure - Poultry | 1998     | 156.72 Mg (tonnes)  | Compilation, see text |
| Nitrogen in unmanaged manure - Poultry | 1999     | 144.38 Mg (tonnes)  | Compilation, see text |
| Nitrogen in unmanaged manure - Poultry | 2000     | 164.66 Mg (tonnes)  | Compilation, see text |
| Nitrogen in unmanaged manure - Poultry | 2001     | 166.92 Mg (tonnes)  | Compilation, see text |
| Nitrogen in unmanaged manure - Poultry | 2002     | 162.37 Mg (tonnes)  | Compilation, see text |
| Nitrogen in unmanaged manure - Poultry | 2003     | 155.54 Mg (tonnes)  | Compilation, see text |
| Nitrogen in unmanaged manure - Poultry | 2004     | 141.66 Mg (tonnes)  | Compilation, see text |
| Nitrogen in unmanaged manure - Poultry | 2005     | 129.77 Mg (tonnes)  | Compilation, see text |
| Nitrogen in unmanaged manure - Poultry | 2006     | 140.22 Mg (tonnes)  | Compilation, see text |
| Nitrogen in unmanaged manure - Poultry | 2007     | 134.36 Mg (tonnes)  | Compilation, see text |
| Nitrogen in unmanaged manure - Poultry | 2008     | 127.78 Mg (tonnes)  | Compilation, see text |
| Nitrogen in unmanaged manure - Poultry | 2009     | 123.73 Mg (tonnes)  | Compilation, see text |
| Nitrogen in unmanaged manure - Poultry | 2010     | 125.38 Mg (tonnes)  | Compilation, see text |
| Nitrogen in unmanaged manure - Poultry | 2011     | 111.77 Mg (tonnes)  | Compilation, see text |
| Nitrogen in unmanaged manure - Poultry | 2012     | 111.85 Mg (tonnes)  | Compilation, see text |
| Nitrogen in unmanaged manure - Poultry | 2013     | 98.8 Mg (tonnes)    | Compilation, see text |
| Nitrogen in unmanaged manure - Poultry | 2014     | 88.27 Mg (tonnes)   | Compilation, see text |
| Leached nitrogen emitted as N2O        | 1990     | 7.500E-03           | IPCC, 2006e           |
| Leached nitrogen emitted as N2O        | 1991     | 7.500E-03           | IPCC, 2006e           |
| Leached nitrogen emitted as N2O        | 1992     | 7.500E-03           | IPCC, 2006e           |
| Leached nitrogen emitted as N2O        | 1993     | 7.500E-03           | IPCC, 2006e           |
| Leached nitrogen emitted as N2O        | 1994     | 7.500E-03           | IPCC, 2006e           |
| Leached nitrogen emitted as N2O        | 1995     | 7.500E-03           | IPCC, 2006e           |
| Leached nitrogen emitted as N2O        | 1996     | 7.500E-03           | IPCC, 2006e           |
| Leached nitrogen emitted as N2O        | 1997     | 7.500E-03           | IPCC, 2006e           |
| Leached nitrogen emitted as N2O        | 1998     | 7.500E-03           | IPCC, 2006e           |
| Leached nitrogen emitted as N2O        | 1999     | 7.500E-03           | IPCC, 2006e           |
| Leached nitrogen emitted as N2O        | 2000     | 7.500E-03           | IPCC, 2006e           |
| Leached nitrogen emitted as N2O        | 2001     | 7.500E-03           | IPCC, 2006e           |
| Leached nitrogen emitted as N2O        | 2002     | 7.500E-03           | IPCC, 2006e           |
| Leached nitrogen emitted as N2O        | 2003     | 7.500E-03           | IPCC, 2006e           |
| Leached nitrogen emitted as N2O        | 2004     | 7.500E-03           | IPCC, 2006e           |

|                                 |      |            |             |
|---------------------------------|------|------------|-------------|
| Leached nitrogen emitted as N2O | 2005 | 7.500E-03  | IPCC, 2006e |
| Leached nitrogen emitted as N2O | 2006 | 7.500E-03  | IPCC, 2006e |
| Leached nitrogen emitted as N2O | 2007 | 7.500E-03  | IPCC, 2006e |
| Leached nitrogen emitted as N2O | 2008 | 7.500E-03  | IPCC, 2006e |
| Leached nitrogen emitted as N2O | 2009 | 7.500E-03  | IPCC, 2006e |
| Leached nitrogen emitted as N2O | 2010 | 7.500E-03  | IPCC, 2006e |
| Leached nitrogen emitted as N2O | 2011 | 7.500E-03  | IPCC, 2006e |
| Leached nitrogen emitted as N2O | 2012 | 7.500E-03  | IPCC, 2006e |
| Leached nitrogen emitted as N2O | 2013 | 7.500E-03  | IPCC, 2006e |
| Leached nitrogen emitted as N2O | 2014 | 7.500E-03  | IPCC, 2006e |
| Leaching rate                   | 1990 | 0.3        | IPCC, 2006e |
| Leaching rate                   | 1991 | 0.3        | IPCC, 2006e |
| Leaching rate                   | 1992 | 0.3        | IPCC, 2006e |
| Leaching rate                   | 1993 | 0.3        | IPCC, 2006e |
| Leaching rate                   | 1994 | 0.3        | IPCC, 2006e |
| Leaching rate                   | 1995 | 0.3        | IPCC, 2006e |
| Leaching rate                   | 1996 | 0.3        | IPCC, 2006e |
| Leaching rate                   | 1997 | 0.3        | IPCC, 2006e |
| Leaching rate                   | 1998 | 0.3        | IPCC, 2006e |
| Leaching rate                   | 1999 | 0.3        | IPCC, 2006e |
| Leaching rate                   | 2000 | 0.3        | IPCC, 2006e |
| Leaching rate                   | 2001 | 0.3        | IPCC, 2006e |
| Leaching rate                   | 2002 | 0.3        | IPCC, 2006e |
| Leaching rate                   | 2003 | 0.3        | IPCC, 2006e |
| Leaching rate                   | 2004 | 0.3        | IPCC, 2006e |
| Leaching rate                   | 2005 | 0.3        | IPCC, 2006e |
| Leaching rate                   | 2006 | 0.3        | IPCC, 2006e |
| Leaching rate                   | 2007 | 0.3        | IPCC, 2006e |
| Leaching rate                   | 2008 | 0.3        | IPCC, 2006e |
| Leaching rate                   | 2009 | 0.3        | IPCC, 2006e |
| Leaching rate                   | 2010 | 0.3        | IPCC, 2006e |
| Leaching rate                   | 2011 | 0.3        | IPCC, 2006e |
| Leaching rate                   | 2012 | 0.3        | IPCC, 2006e |
| Leaching rate                   | 2013 | 0.3        | IPCC, 2006e |
| Leaching rate                   | 2014 | 0.3        | IPCC, 2006e |
| Nitrogen emitted as N2O         | 1990 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O         | 1991 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O         | 1992 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O         | 1993 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O         | 1994 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O         | 1995 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O         | 1996 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O         | 1997 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O         | 1998 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O         | 1999 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O         | 2000 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O         | 2001 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O         | 2002 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O         | 2003 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O         | 2004 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O         | 2005 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O         | 2006 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O         | 2007 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O         | 2008 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O         | 2009 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O         | 2010 | 0.01 g / g | IPCC, 2006e |



|  |      |            |             |
|--|------|------------|-------------|
| Nitrogen emitted as N <sub>2</sub> O             | 2011 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N <sub>2</sub> O             | 2012 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N <sub>2</sub> O             | 2013 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N <sub>2</sub> O             | 2014 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N <sub>2</sub> O | 1990 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N <sub>2</sub> O | 1991 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N <sub>2</sub> O | 1992 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N <sub>2</sub> O | 1993 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N <sub>2</sub> O | 1994 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N <sub>2</sub> O | 1995 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N <sub>2</sub> O | 1996 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N <sub>2</sub> O | 1997 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N <sub>2</sub> O | 1998 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N <sub>2</sub> O | 1999 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N <sub>2</sub> O | 2000 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N <sub>2</sub> O | 2001 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N <sub>2</sub> O | 2002 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N <sub>2</sub> O | 2003 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N <sub>2</sub> O | 2004 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N <sub>2</sub> O | 2005 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N <sub>2</sub> O | 2006 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N <sub>2</sub> O | 2007 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N <sub>2</sub> O | 2008 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N <sub>2</sub> O | 2009 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N <sub>2</sub> O | 2010 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N <sub>2</sub> O | 2011 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N <sub>2</sub> O | 2012 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N <sub>2</sub> O | 2013 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N <sub>2</sub> O | 2014 | 0.01 g / g | IPCC, 2006e |
| Volatilization rate                              | 1990 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                              | 1991 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                              | 1992 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                              | 1993 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                              | 1994 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                              | 1995 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                              | 1996 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                              | 1997 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                              | 1998 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                              | 1999 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                              | 2000 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                              | 2001 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                              | 2002 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                              | 2003 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                              | 2004 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                              | 2005 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                              | 2006 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                              | 2007 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                              | 2008 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                              | 2009 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                              | 2010 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                              | 2011 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                              | 2012 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                              | 2013 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                              | 2014 | 0.2 g / g  | IPCC, 2006e |

**Activity = Nitrogen in unmanaged manure - Sheep, goat, horse**

| - Variable Name -                                 | - Year - | - Value and Units -        | - Reference -         |
|---|----------|----------------------------|-----------------------|
| Nitrogen in unmanaged manure - Sheep, goat, horse | 1990     | 28.26 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in unmanaged manure - Sheep, goat, horse | 1991     | 28.52 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in unmanaged manure - Sheep, goat, horse | 1992     | 28.38 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in unmanaged manure - Sheep, goat, horse | 1993     | 27.39 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in unmanaged manure - Sheep, goat, horse | 1994     | 28.86 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in unmanaged manure - Sheep, goat, horse | 1995     | 27.95 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in unmanaged manure - Sheep, goat, horse | 1996     | 26.72 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in unmanaged manure - Sheep, goat, horse | 1997     | 26.1 Gg (thousand tonnes)  | Compilation, see text |
| Nitrogen in unmanaged manure - Sheep, goat, horse | 1998     | 25.4 Gg (thousand tonnes)  | Compilation, see text |
| Nitrogen in unmanaged manure - Sheep, goat, horse | 1999     | 24.91 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in unmanaged manure - Sheep, goat, horse | 2000     | 24.47 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in unmanaged manure - Sheep, goat, horse | 2001     | 24.76 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in unmanaged manure - Sheep, goat, horse | 2002     | 25.77 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in unmanaged manure - Sheep, goat, horse | 2003     | 28.43 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in unmanaged manure - Sheep, goat, horse | 2004     | 30.73 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in unmanaged manure - Sheep, goat, horse | 2005     | 34.03 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in unmanaged manure - Sheep, goat, horse | 2006     | 34.11 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in unmanaged manure - Sheep, goat, horse | 2007     | 33.29 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in unmanaged manure - Sheep, goat, horse | 2008     | 32.82 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in unmanaged manure - Sheep, goat, horse | 2009     | 33.99 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in unmanaged manure - Sheep, goat, horse | 2010     | 34.18 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in unmanaged manure - Sheep, goat, horse | 2011     | 34.54 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in unmanaged manure - Sheep, goat, horse | 2012     | 34.48 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in unmanaged manure - Sheep, goat, horse | 2013     | 34.34 Gg (thousand tonnes) | Compilation, see text |
| Nitrogen in unmanaged manure - Sheep, goat, horse | 2014     | 34.52 Gg (thousand tonnes) | Compilation, see text |
| Leached nitrogen emitted as N2O                   | 1990     | 7.500E-03                  | IPCC, 2006e           |
| Leached nitrogen emitted as N2O                   | 1991     | 7.500E-03                  | IPCC, 2006e           |
| Leached nitrogen emitted as N2O                   | 1992     | 7.500E-03                  | IPCC, 2006e           |
| Leached nitrogen emitted as N2O                   | 1993     | 7.500E-03                  | IPCC, 2006e           |
| Leached nitrogen emitted as N2O                   | 1994     | 7.500E-03                  | IPCC, 2006e           |
| Leached nitrogen emitted as N2O                   | 1995     | 7.500E-03                  | IPCC, 2006e           |
| Leached nitrogen emitted as N2O                   | 1996     | 7.500E-03                  | IPCC, 2006e           |
| Leached nitrogen emitted as N2O                   | 1997     | 7.500E-03                  | IPCC, 2006e           |
| Leached nitrogen emitted as N2O                   | 1998     | 7.500E-03                  | IPCC, 2006e           |
| Leached nitrogen emitted as N2O                   | 1999     | 7.500E-03                  | IPCC, 2006e           |
| Leached nitrogen emitted as N2O                   | 2000     | 7.500E-03                  | IPCC, 2006e           |
| Leached nitrogen emitted as N2O                   | 2001     | 7.500E-03                  | IPCC, 2006e           |
| Leached nitrogen emitted as N2O                   | 2002     | 7.500E-03                  | IPCC, 2006e           |
| Leached nitrogen emitted as N2O                   | 2003     | 7.500E-03                  | IPCC, 2006e           |
| Leached nitrogen emitted as N2O                   | 2004     | 7.500E-03                  | IPCC, 2006e           |
| Leached nitrogen emitted as N2O                   | 2005     | 7.500E-03                  | IPCC, 2006e           |
| Leached nitrogen emitted as N2O                   | 2006     | 7.500E-03                  | IPCC, 2006e           |
| Leached nitrogen emitted as N2O                   | 2007     | 7.500E-03                  | IPCC, 2006e           |
| Leached nitrogen emitted as N2O                   | 2008     | 7.500E-03                  | IPCC, 2006e           |
| Leached nitrogen emitted as N2O                   | 2009     | 7.500E-03                  | IPCC, 2006e           |
| Leached nitrogen emitted as N2O                   | 2010     | 7.500E-03                  | IPCC, 2006e           |
| Leached nitrogen emitted as N2O                   | 2011     | 7.500E-03                  | IPCC, 2006e           |
| Leached nitrogen emitted as N2O                   | 2012     | 7.500E-03                  | IPCC, 2006e           |
| Leached nitrogen emitted as N2O                   | 2013     | 7.500E-03                  | IPCC, 2006e           |
| Leached nitrogen emitted as N2O                   | 2014     | 7.500E-03                  | IPCC, 2006e           |
| Leaching rate                                     | 1990     | 0.3                        | IPCC, 2006e           |
| Leaching rate                                     | 1991     | 0.3                        | IPCC, 2006e           |
| Leaching rate                                     | 1992     | 0.3                        | IPCC, 2006e           |

|  |      |            |             |
|--|------|------------|-------------|
| Leaching rate                                    | 1993 | 0.3        | IPCC, 2006e |
| Leaching rate                                    | 1994 | 0.3        | IPCC, 2006e |
| Leaching rate                                    | 1995 | 0.3        | IPCC, 2006e |
| Leaching rate                                    | 1996 | 0.3        | IPCC, 2006e |
| Leaching rate                                    | 1997 | 0.3        | IPCC, 2006e |
| Leaching rate                                    | 1998 | 0.3        | IPCC, 2006e |
| Leaching rate                                    | 1999 | 0.3        | IPCC, 2006e |
| Leaching rate                                    | 2000 | 0.3        | IPCC, 2006e |
| Leaching rate                                    | 2001 | 0.3        | IPCC, 2006e |
| Leaching rate                                    | 2002 | 0.3        | IPCC, 2006e |
| Leaching rate                                    | 2003 | 0.3        | IPCC, 2006e |
| Leaching rate                                    | 2004 | 0.3        | IPCC, 2006e |
| Leaching rate                                    | 2005 | 0.3        | IPCC, 2006e |
| Leaching rate                                    | 2006 | 0.3        | IPCC, 2006e |
| Leaching rate                                    | 2007 | 0.3        | IPCC, 2006e |
| Leaching rate                                    | 2008 | 0.3        | IPCC, 2006e |
| Leaching rate                                    | 2009 | 0.3        | IPCC, 2006e |
| Leaching rate                                    | 2010 | 0.3        | IPCC, 2006e |
| Leaching rate                                    | 2011 | 0.3        | IPCC, 2006e |
| Leaching rate                                    | 2012 | 0.3        | IPCC, 2006e |
| Leaching rate                                    | 2013 | 0.3        | IPCC, 2006e |
| Leaching rate                                    | 2014 | 0.3        | IPCC, 2006e |
| Redeposited nitrogen emitted as N <sub>2</sub> O | 1990 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N <sub>2</sub> O | 1991 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N <sub>2</sub> O | 1992 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N <sub>2</sub> O | 1993 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N <sub>2</sub> O | 1994 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N <sub>2</sub> O | 1995 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N <sub>2</sub> O | 1996 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N <sub>2</sub> O | 1997 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N <sub>2</sub> O | 1998 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N <sub>2</sub> O | 1999 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N <sub>2</sub> O | 2000 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N <sub>2</sub> O | 2001 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N <sub>2</sub> O | 2002 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N <sub>2</sub> O | 2003 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N <sub>2</sub> O | 2004 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N <sub>2</sub> O | 2005 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N <sub>2</sub> O | 2006 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N <sub>2</sub> O | 2007 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N <sub>2</sub> O | 2008 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N <sub>2</sub> O | 2009 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N <sub>2</sub> O | 2010 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N <sub>2</sub> O | 2011 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N <sub>2</sub> O | 2012 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N <sub>2</sub> O | 2013 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N <sub>2</sub> O | 2014 | 0.01 g / g | IPCC, 2006e |
| Volatilization rate                              | 1990 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                              | 1991 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                              | 1992 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                              | 1993 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                              | 1994 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                              | 1995 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                              | 1996 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                              | 1997 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                              | 1998 | 0.2 g / g  | IPCC, 2006e |

|                     |      |           |             |
|---------------------|------|-----------|-------------|
| Volatilization rate | 1999 | 0.2 g / g | IPCC, 2006e |
| Volatilization rate | 2000 | 0.2 g / g | IPCC, 2006e |
| Volatilization rate | 2001 | 0.2 g / g | IPCC, 2006e |
| Volatilization rate | 2002 | 0.2 g / g | IPCC, 2006e |
| Volatilization rate | 2003 | 0.2 g / g | IPCC, 2006e |
| Volatilization rate | 2004 | 0.2 g / g | IPCC, 2006e |
| Volatilization rate | 2005 | 0.2 g / g | IPCC, 2006e |
| Volatilization rate | 2006 | 0.2 g / g | IPCC, 2006e |
| Volatilization rate | 2007 | 0.2 g / g | IPCC, 2006e |
| Volatilization rate | 2008 | 0.2 g / g | IPCC, 2006e |
| Volatilization rate | 2009 | 0.2 g / g | IPCC, 2006e |
| Volatilization rate | 2010 | 0.2 g / g | IPCC, 2006e |
| Volatilization rate | 2011 | 0.2 g / g | IPCC, 2006e |
| Volatilization rate | 2012 | 0.2 g / g | IPCC, 2006e |
| Volatilization rate | 2013 | 0.2 g / g | IPCC, 2006e |
| Volatilization rate | 2014 | 0.2 g / g | IPCC, 2006e |

**Activity = Nitrogen in unmanaged manure - Swine**

| - Variable Name -                    | - Year - | - Value and Units - | - Reference -         |
|--------------------------------------|----------|---------------------|-----------------------|
| Nitrogen in unmanaged manure - Swine | 1990     | 205.02 Mg (tonnes)  | Compilation, see text |
| Nitrogen in unmanaged manure - Swine | 1991     | 228.75 Mg (tonnes)  | Compilation, see text |
| Nitrogen in unmanaged manure - Swine | 1992     | 284.84 Mg (tonnes)  | Compilation, see text |
| Nitrogen in unmanaged manure - Swine | 1993     | 268.77 Mg (tonnes)  | Compilation, see text |
| Nitrogen in unmanaged manure - Swine | 1994     | 249.48 Mg (tonnes)  | Compilation, see text |
| Nitrogen in unmanaged manure - Swine | 1995     | 226.15 Mg (tonnes)  | Compilation, see text |
| Nitrogen in unmanaged manure - Swine | 1996     | 186.22 Mg (tonnes)  | Compilation, see text |
| Nitrogen in unmanaged manure - Swine | 1997     | 178.19 Mg (tonnes)  | Compilation, see text |
| Nitrogen in unmanaged manure - Swine | 1998     | 181.16 Mg (tonnes)  | Compilation, see text |
| Nitrogen in unmanaged manure - Swine | 1999     | 185.65 Mg (tonnes)  | Compilation, see text |
| Nitrogen in unmanaged manure - Swine | 2000     | 163.57 Mg (tonnes)  | Compilation, see text |
| Nitrogen in unmanaged manure - Swine | 2001     | 130.47 Mg (tonnes)  | Compilation, see text |
| Nitrogen in unmanaged manure - Swine | 2002     | 200.42 Mg (tonnes)  | Compilation, see text |
| Nitrogen in unmanaged manure - Swine | 2003     | 177.77 Mg (tonnes)  | Compilation, see text |
| Nitrogen in unmanaged manure - Swine | 2004     | 178.8 Mg (tonnes)   | Compilation, see text |
| Nitrogen in unmanaged manure - Swine | 2005     | 166.67 Mg (tonnes)  | Compilation, see text |
| Nitrogen in unmanaged manure - Swine | 2006     | 156.52 Mg (tonnes)  | Compilation, see text |
| Nitrogen in unmanaged manure - Swine | 2007     | 165.55 Mg (tonnes)  | Compilation, see text |
| Nitrogen in unmanaged manure - Swine | 2008     | 83.63 Mg (tonnes)   | Compilation, see text |
| Nitrogen in unmanaged manure - Swine | 2009     | 116.25 Mg (tonnes)  | Compilation, see text |
| Nitrogen in unmanaged manure - Swine | 2010     | 109.85 Mg (tonnes)  | Compilation, see text |
| Nitrogen in unmanaged manure - Swine | 2011     | 116 Mg (tonnes)     | Compilation, see text |
| Nitrogen in unmanaged manure - Swine | 2012     | 114.16 Mg (tonnes)  | Compilation, see text |
| Nitrogen in unmanaged manure - Swine | 2013     | 105.38 Mg (tonnes)  | Compilation, see text |
| Nitrogen in unmanaged manure - Swine | 2014     | 116.95 Mg (tonnes)  | Compilation, see text |
| Leached nitrogen emitted as N2O      | 1990     | 7.500E-03           | IPCC, 2006e           |
| Leached nitrogen emitted as N2O      | 1991     | 7.500E-03           | IPCC, 2006e           |
| Leached nitrogen emitted as N2O      | 1992     | 7.500E-03           | IPCC, 2006e           |
| Leached nitrogen emitted as N2O      | 1993     | 7.500E-03           | IPCC, 2006e           |
| Leached nitrogen emitted as N2O      | 1994     | 7.500E-03           | IPCC, 2006e           |
| Leached nitrogen emitted as N2O      | 1995     | 7.500E-03           | IPCC, 2006e           |
| Leached nitrogen emitted as N2O      | 1996     | 7.500E-03           | IPCC, 2006e           |
| Leached nitrogen emitted as N2O      | 1997     | 7.500E-03           | IPCC, 2006e           |
| Leached nitrogen emitted as N2O      | 1998     | 7.500E-03           | IPCC, 2006e           |
| Leached nitrogen emitted as N2O      | 1999     | 7.500E-03           | IPCC, 2006e           |
| Leached nitrogen emitted as N2O      | 2000     | 7.500E-03           | IPCC, 2006e           |
| Leached nitrogen emitted as N2O      | 2001     | 7.500E-03           | IPCC, 2006e           |

|                                 |      |           |             |
|---------------------------------|------|-----------|-------------|
| Leached nitrogen emitted as N2O | 2002 | 7.500E-03 | IPCC, 2006e |
| Leached nitrogen emitted as N2O | 2003 | 7.500E-03 | IPCC, 2006e |
| Leached nitrogen emitted as N2O | 2004 | 7.500E-03 | IPCC, 2006e |
| Leached nitrogen emitted as N2O | 2005 | 7.500E-03 | IPCC, 2006e |
| Leached nitrogen emitted as N2O | 2006 | 7.500E-03 | IPCC, 2006e |
| Leached nitrogen emitted as N2O | 2007 | 7.500E-03 | IPCC, 2006e |
| Leached nitrogen emitted as N2O | 2008 | 7.500E-03 | IPCC, 2006e |
| Leached nitrogen emitted as N2O | 2009 | 7.500E-03 | IPCC, 2006e |
| Leached nitrogen emitted as N2O | 2010 | 7.500E-03 | IPCC, 2006e |
| Leached nitrogen emitted as N2O | 2011 | 7.500E-03 | IPCC, 2006e |
| Leached nitrogen emitted as N2O | 2012 | 7.500E-03 | IPCC, 2006e |
| Leached nitrogen emitted as N2O | 2013 | 7.500E-03 | IPCC, 2006e |
| Leached nitrogen emitted as N2O | 2014 | 7.500E-03 | IPCC, 2006e |

|               |      |     |             |
|---------------|------|-----|-------------|
| Leaching rate | 1990 | 0.3 | IPCC, 2006e |
| Leaching rate | 1991 | 0.3 | IPCC, 2006e |
| Leaching rate | 1992 | 0.3 | IPCC, 2006e |
| Leaching rate | 1993 | 0.3 | IPCC, 2006e |
| Leaching rate | 1994 | 0.3 | IPCC, 2006e |
| Leaching rate | 1995 | 0.3 | IPCC, 2006e |
| Leaching rate | 1996 | 0.3 | IPCC, 2006e |
| Leaching rate | 1997 | 0.3 | IPCC, 2006e |
| Leaching rate | 1998 | 0.3 | IPCC, 2006e |
| Leaching rate | 1999 | 0.3 | IPCC, 2006e |
| Leaching rate | 2000 | 0.3 | IPCC, 2006e |
| Leaching rate | 2001 | 0.3 | IPCC, 2006e |
| Leaching rate | 2002 | 0.3 | IPCC, 2006e |
| Leaching rate | 2003 | 0.3 | IPCC, 2006e |
| Leaching rate | 2004 | 0.3 | IPCC, 2006e |
| Leaching rate | 2005 | 0.3 | IPCC, 2006e |
| Leaching rate | 2006 | 0.3 | IPCC, 2006e |
| Leaching rate | 2007 | 0.3 | IPCC, 2006e |
| Leaching rate | 2008 | 0.3 | IPCC, 2006e |
| Leaching rate | 2009 | 0.3 | IPCC, 2006e |
| Leaching rate | 2010 | 0.3 | IPCC, 2006e |
| Leaching rate | 2011 | 0.3 | IPCC, 2006e |
| Leaching rate | 2012 | 0.3 | IPCC, 2006e |
| Leaching rate | 2013 | 0.3 | IPCC, 2006e |
| Leaching rate | 2014 | 0.3 | IPCC, 2006e |

|                         |      |            |             |
|-------------------------|------|------------|-------------|
| Nitrogen emitted as N2O | 1990 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O | 1991 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O | 1992 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O | 1993 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O | 1994 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O | 1995 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O | 1996 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O | 1997 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O | 1998 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O | 1999 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O | 2000 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O | 2001 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O | 2002 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O | 2003 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O | 2004 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O | 2005 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O | 2006 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O | 2007 | 0.01 g / g | IPCC, 2006e |

|                                     |      |            |             |
|-------------------------------------|------|------------|-------------|
| Nitrogen emitted as N2O             | 2008 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O             | 2009 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O             | 2010 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O             | 2011 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O             | 2012 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O             | 2013 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O             | 2014 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 1990 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 1991 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 1992 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 1993 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 1994 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 1995 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 1996 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 1997 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 1998 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 1999 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 2000 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 2001 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 2002 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 2003 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 2004 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 2005 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 2006 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 2007 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 2008 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 2009 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 2010 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 2011 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 2012 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 2013 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 2014 | 0.01 g / g | IPCC, 2006e |
| Volatilization rate                 | 1990 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                 | 1991 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                 | 1992 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                 | 1993 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                 | 1994 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                 | 1995 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                 | 1996 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                 | 1997 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                 | 1998 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                 | 1999 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                 | 2000 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                 | 2001 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                 | 2002 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                 | 2003 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                 | 2004 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                 | 2005 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                 | 2006 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                 | 2007 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                 | 2008 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                 | 2009 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                 | 2010 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                 | 2011 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                 | 2012 | 0.2 g / g  | IPCC, 2006e |
| Volatilization rate                 | 2013 | 0.2 g / g  | IPCC, 2006e |



Volatilization rate 2014 0.2 g / g IPCC, 2006e

**Activity = Residential use of nitrogen fertilizer on turf - Synthetic fertilizers**

| - Variable Name -  | - Year - | - Value and Units - | - Reference -         |
|--|----------|---------------------|-----------------------|
| Residential use of nitrogen fertilizer on turf - Synthetic fertilizers | 1990     | 114,938 ton         | Compilation, see text |
| Residential use of nitrogen fertilizer on turf - Synthetic fertilizers | 1991     | 117,366 ton         | Compilation, see text |
| Residential use of nitrogen fertilizer on turf - Synthetic fertilizers | 1992     | 119,404 ton         | Compilation, see text |
| Residential use of nitrogen fertilizer on turf - Synthetic fertilizers | 1993     | 120,663 ton         | Compilation, see text |
| Residential use of nitrogen fertilizer on turf - Synthetic fertilizers | 1994     | 121,470 ton         | Compilation, see text |
| Residential use of nitrogen fertilizer on turf - Synthetic fertilizers | 1995     | 122,195 ton         | Compilation, see text |
| Residential use of nitrogen fertilizer on turf - Synthetic fertilizers | 1996     | 123,163 ton         | Compilation, see text |
| Residential use of nitrogen fertilizer on turf - Synthetic fertilizers | 1997     | 125,050 ton         | Compilation, see text |
| Residential use of nitrogen fertilizer on turf - Synthetic fertilizers | 1998     | 126,631 ton         | Compilation, see text |
| Residential use of nitrogen fertilizer on turf - Synthetic fertilizers | 1999     | 128,772 ton         | Compilation, see text |
| Residential use of nitrogen fertilizer on turf - Synthetic fertilizers | 2000     | 131,015 ton         | Compilation, see text |
| Residential use of nitrogen fertilizer on turf - Synthetic fertilizers | 2001     | 132,988 ton         | Compilation, see text |
| Residential use of nitrogen fertilizer on turf - Synthetic fertilizers | 2002     | 134,628 ton         | Compilation, see text |
| Residential use of nitrogen fertilizer on turf - Synthetic fertilizers | 2003     | 136,364 ton         | Compilation, see text |
| Residential use of nitrogen fertilizer on turf - Synthetic fertilizers | 2004     | 137,766 ton         | Compilation, see text |
| Residential use of nitrogen fertilizer on turf - Synthetic fertilizers | 2005     | 138,663 ton         | Compilation, see text |
| Residential use of nitrogen fertilizer on turf - Synthetic fertilizers | 2006     | 139,670 ton         | Compilation, see text |
| Residential use of nitrogen fertilizer on turf - Synthetic fertilizers | 2007     | 140,848 ton         | Compilation, see text |
| Residential use of nitrogen fertilizer on turf - Synthetic fertilizers | 2008     | 142,018 ton         | Compilation, see text |
| Residential use of nitrogen fertilizer on turf - Synthetic fertilizers | 2009     | 142,870 ton         | Compilation, see text |
| Residential use of nitrogen fertilizer on turf - Synthetic fertilizers | 2010     | 143,867 ton         | Compilation, see text |
| Residential use of nitrogen fertilizer on turf - Synthetic fertilizers | 2011     | 145,277 ton         | Compilation, see text |
| Residential use of nitrogen fertilizer on turf - Synthetic fertilizers | 2012     | 146,667 ton         | Compilation, see text |
| Residential use of nitrogen fertilizer on turf - Synthetic fertilizers | 2013     | 148,088 ton         | Compilation, see text |
| Residential use of nitrogen fertilizer on turf - Synthetic fertilizers | 2014     | 149,518 ton         | Compilation, see text |
| Leached nitrogen emitted as N <sub>2</sub> O                           | 1990     | 7.500E-03           | IPCC, 2006e           |
| Leached nitrogen emitted as N <sub>2</sub> O                           | 1991     | 7.500E-03           | IPCC, 2006e           |
| Leached nitrogen emitted as N <sub>2</sub> O                           | 1992     | 7.500E-03           | IPCC, 2006e           |
| Leached nitrogen emitted as N <sub>2</sub> O                           | 1993     | 7.500E-03           | IPCC, 2006e           |
| Leached nitrogen emitted as N <sub>2</sub> O                           | 1994     | 7.500E-03           | IPCC, 2006e           |
| Leached nitrogen emitted as N <sub>2</sub> O                           | 1995     | 7.500E-03           | IPCC, 2006e           |
| Leached nitrogen emitted as N <sub>2</sub> O                           | 1996     | 7.500E-03           | IPCC, 2006e           |
| Leached nitrogen emitted as N <sub>2</sub> O                           | 1997     | 7.500E-03           | IPCC, 2006e           |
| Leached nitrogen emitted as N <sub>2</sub> O                           | 1998     | 7.500E-03           | IPCC, 2006e           |
| Leached nitrogen emitted as N <sub>2</sub> O                           | 1999     | 7.500E-03           | IPCC, 2006e           |
| Leached nitrogen emitted as N <sub>2</sub> O                           | 2000     | 7.500E-03           | IPCC, 2006e           |

|                                 |      |           |             |
|---------------------------------|------|-----------|-------------|
| Leached nitrogen emitted as N2O | 2001 | 7.500E-03 | IPCC, 2006e |
| Leached nitrogen emitted as N2O | 2002 | 7.500E-03 | IPCC, 2006e |
| Leached nitrogen emitted as N2O | 2003 | 7.500E-03 | IPCC, 2006e |
| Leached nitrogen emitted as N2O | 2004 | 7.500E-03 | IPCC, 2006e |
| Leached nitrogen emitted as N2O | 2005 | 7.500E-03 | IPCC, 2006e |
| Leached nitrogen emitted as N2O | 2006 | 7.500E-03 | IPCC, 2006e |
| Leached nitrogen emitted as N2O | 2007 | 7.500E-03 | IPCC, 2006e |
| Leached nitrogen emitted as N2O | 2008 | 7.500E-03 | IPCC, 2006e |
| Leached nitrogen emitted as N2O | 2009 | 7.500E-03 | IPCC, 2006e |
| Leached nitrogen emitted as N2O | 2010 | 7.500E-03 | IPCC, 2006e |
| Leached nitrogen emitted as N2O | 2011 | 7.500E-03 | IPCC, 2006e |
| Leached nitrogen emitted as N2O | 2012 | 7.500E-03 | IPCC, 2006e |
| Leached nitrogen emitted as N2O | 2013 | 7.500E-03 | IPCC, 2006e |
| Leached nitrogen emitted as N2O | 2014 | 7.500E-03 | IPCC, 2006e |

|               |      |     |             |
|---------------|------|-----|-------------|
| Leaching rate | 1990 | 0.3 | IPCC, 2006e |
| Leaching rate | 1991 | 0.3 | IPCC, 2006e |
| Leaching rate | 1992 | 0.3 | IPCC, 2006e |
| Leaching rate | 1993 | 0.3 | IPCC, 2006e |
| Leaching rate | 1994 | 0.3 | IPCC, 2006e |
| Leaching rate | 1995 | 0.3 | IPCC, 2006e |
| Leaching rate | 1996 | 0.3 | IPCC, 2006e |
| Leaching rate | 1997 | 0.3 | IPCC, 2006e |
| Leaching rate | 1998 | 0.3 | IPCC, 2006e |
| Leaching rate | 1999 | 0.3 | IPCC, 2006e |
| Leaching rate | 2000 | 0.3 | IPCC, 2006e |
| Leaching rate | 2001 | 0.3 | IPCC, 2006e |
| Leaching rate | 2002 | 0.3 | IPCC, 2006e |
| Leaching rate | 2003 | 0.3 | IPCC, 2006e |
| Leaching rate | 2004 | 0.3 | IPCC, 2006e |
| Leaching rate | 2005 | 0.3 | IPCC, 2006e |
| Leaching rate | 2006 | 0.3 | IPCC, 2006e |
| Leaching rate | 2007 | 0.3 | IPCC, 2006e |
| Leaching rate | 2008 | 0.3 | IPCC, 2006e |
| Leaching rate | 2009 | 0.3 | IPCC, 2006e |
| Leaching rate | 2010 | 0.3 | IPCC, 2006e |
| Leaching rate | 2011 | 0.3 | IPCC, 2006e |
| Leaching rate | 2012 | 0.3 | IPCC, 2006e |
| Leaching rate | 2013 | 0.3 | IPCC, 2006e |
| Leaching rate | 2014 | 0.3 | IPCC, 2006e |

|                         |      |            |             |
|-------------------------|------|------------|-------------|
| Nitrogen emitted as N2O | 1990 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O | 1991 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O | 1992 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O | 1993 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O | 1994 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O | 1995 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O | 1996 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O | 1997 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O | 1998 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O | 1999 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O | 2000 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O | 2001 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O | 2002 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O | 2003 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O | 2004 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O | 2005 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O | 2006 | 0.01 g / g | IPCC, 2006e |

|                                     |      |            |             |
|-------------------------------------|------|------------|-------------|
| Nitrogen emitted as N2O             | 2007 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O             | 2008 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O             | 2009 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O             | 2010 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O             | 2011 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O             | 2012 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O             | 2013 | 0.01 g / g | IPCC, 2006e |
| Nitrogen emitted as N2O             | 2014 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 1990 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 1991 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 1992 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 1993 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 1994 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 1995 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 1996 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 1997 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 1998 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 1999 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 2000 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 2001 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 2002 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 2003 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 2004 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 2005 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 2006 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 2007 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 2008 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 2009 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 2010 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 2011 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 2012 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 2013 | 0.01 g / g | IPCC, 2006e |
| Redeposited nitrogen emitted as N2O | 2014 | 0.01 g / g | IPCC, 2006e |
| Volatilization rate                 | 1990 | 0.1 g / g  | IPCC, 2006e |
| Volatilization rate                 | 1991 | 0.1 g / g  | IPCC, 2006e |
| Volatilization rate                 | 1992 | 0.1 g / g  | IPCC, 2006e |
| Volatilization rate                 | 1993 | 0.1 g / g  | IPCC, 2006e |
| Volatilization rate                 | 1994 | 0.1 g / g  | IPCC, 2006e |
| Volatilization rate                 | 1995 | 0.1 g / g  | IPCC, 2006e |
| Volatilization rate                 | 1996 | 0.1 g / g  | IPCC, 2006e |
| Volatilization rate                 | 1997 | 0.1 g / g  | IPCC, 2006e |
| Volatilization rate                 | 1998 | 0.1 g / g  | IPCC, 2006e |
| Volatilization rate                 | 1999 | 0.1 g / g  | IPCC, 2006e |
| Volatilization rate                 | 2000 | 0.1 g / g  | IPCC, 2006e |
| Volatilization rate                 | 2001 | 0.1 g / g  | IPCC, 2006e |
| Volatilization rate                 | 2002 | 0.1 g / g  | IPCC, 2006e |
| Volatilization rate                 | 2003 | 0.1 g / g  | IPCC, 2006e |
| Volatilization rate                 | 2004 | 0.1 g / g  | IPCC, 2006e |
| Volatilization rate                 | 2005 | 0.1 g / g  | IPCC, 2006e |
| Volatilization rate                 | 2006 | 0.1 g / g  | IPCC, 2006e |
| Volatilization rate                 | 2007 | 0.1 g / g  | IPCC, 2006e |
| Volatilization rate                 | 2008 | 0.1 g / g  | IPCC, 2006e |
| Volatilization rate                 | 2009 | 0.1 g / g  | IPCC, 2006e |
| Volatilization rate                 | 2010 | 0.1 g / g  | IPCC, 2006e |
| Volatilization rate                 | 2011 | 0.1 g / g  | IPCC, 2006e |
| Volatilization rate                 | 2012 | 0.1 g / g  | IPCC, 2006e |

## Variables Used in the Emissions Estimation Equations

Values last updated on Wednesday, March 30, 2016

|                     |      |           |             |
|---------------------|------|-----------|-------------|
| Volatilization rate | 2013 | 0.1 g / g | IPCC, 2006e |
| Volatilization rate | 2014 | 0.1 g / g | IPCC, 2006e |